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THE NEWSPAPER OF THE INDUSTRY

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INSIDE DOPE

by GEORGE F. TAUBENECK

Story of the Week
Gags of the Week
Philosophy of the Week
Verse of the Week
Exciting Factory
How're They Gonna Sell 'Em?
Know Where They're Going
Fewer Dealers, Fewer Lines
Sharp Is Sharp
Advice to Dealers

Story of the Week

Nate Gross declares Mrs. Harry Truman brushed off a newspaper syndicate promoter in Chicago:

"Write my memoirs? I should say not! Two publicity hounds in the same family are enough!"

Gags of the Week

Lou Maxon missed an opportunity for a great "commercial" after the final game of the World Series. He should have put Dodgers Manager Charlie Dressen on radio and TV avowing:

"I'll use Gillette razor blades to cut my throat."

After reading both Kinsey Reports the redoubtable Chuck Branch cracked:

"Oh what a tangled web we weave
"When first we practice to conceive."

"Young people today are blase, dreary, and often ill-mannered. Give me the middle-aged. They know how to enjoy themselves."—*Gay Claridge,* dance band leader.

Some men work hard and save their money so their sons won't have the problems that made men of their fathers. — *Scripps-Howard Newspapers.*

Philosophy of the Week

He who serves his brother best gets nearer God than all the rest.—JOHN RUSKIN.

Right time to read the Book of Nature is when Autumn turns the leaves.

Verse of the Week

The world puts on its robes of glory now;
The very flowers are tinged with deeper dyes:
The waves are bluer, and the angels pitch
Their shining tents along the sunset skies.

A haze on the far horizon,
The infinite tender sky,
The ripe, rich tint of the cornfields,
And the wild geese sailing high—
And all over upland and lowland
The charm of the golden-rod,
Some of us call it Autumn,
And others call it God.

WILLIAM HERBERT CARRUTH

Exciting Factory

Included in this issue is something you seldom see in AIR CONDITIONING & REFRIGERATION NEWS: a special section. Editorial Director Phil Redeker was so impressed with Hotpoint's spanking new refrigerator plant he decided subscribers would be interested in it, too. Hence, he did a real good job of mirroring this factory in print.

How a refrigerator *actually is made* is a subject we haven't explored for a long, long time. Perhaps now—a period when merchandising news is in a hiatus—is a good time to look into it. ("Dope" is not unaware of an additional fact: this special section gave our advertising boys a chance to make a few extra bucks.)

How're They Gonna Sell 'Em?

The factory itself, terrific though it is, didn't interest "Dope" so much as learning whether or not Hotpoint had figured out how to sell all the refrigerators it can produce.

In the industry's peak year (1950)

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Conference Discusses Air Conditioning Fan Motor Requirements

FORT WAYNE, Ind.—What do air conditioning engineers want most in fan motors?

Quiet operation, permanent lubrication for long life, universal mounting in any position, and low cost were the answers given to motor designers at a special conference here.

These facts and many others were brought out at a two-day conference here sponsored by the Fort Wayne section, American Institute of Electrical Engineers, and the AEII Committee on Rotating Machinery, to discuss "Application of Motors to Air Moving Equipment."

Text of one paper is published on pp. 12-13 of this issue. Others will be published in future issues of the NEWS.

Although various types of air moving equipment were discussed, most interest of the nearly 300 present at the Van Orman hotel sessions was aroused by air conditioning application problems.

These were outlined principally in two talks: "Application of Shaded Pole Motors to Room Air Conditioners," by R. W. Morgan, chief engineer of Fedders-Quigan Corp., and "Requirements of Air Conditioning Fan Motors," by M. D. Irwin, product engineer in Carrier Corp.'s Unitary Equipment Division.

(Concluded on Back Page, Column 4)

Sears May Market Home Air Conditioning System

CHICAGO—Sears Roebuck & Co. may market a complete home air conditioning system next year, according to reports circulating here.

The Sears unit would be designed to be installed with existing warm air heating system, and would be a "waterless" unit, it is reported. Forced air cooling would be used in the condensing unit, it is said.

New Hotpoint Refrigerator Plant Producing '54 Line

CHICAGO—Being formally opened here Oct. 23 is the Hotpoint Co.'s new household refrigerator manufacturing plant, designed and constructed to build "the refrigerator of tomorrow."

With pilot runs on the lines completed some time ago, the new Hotpoint facility is swinging into a full production effort on the company's 1954 line of household electric refrigerators.

Hotpoint's management is well aware that "tomorrow's refrigerator" must be better designed, provide superior performance, have a better finish, and provide such "customer-wanted" items as automatic defrosting.

"Tomorrow's refrigerator plant" must be more efficient, too, Hotpoint's management reasoned. New tools for faster and better fabrication would have to be used. New paints and methods of painting and applying finishes must be found. Extraction of moisture from the hermetically sealed refrigeration system must be as close to 100% as possible. The refrigerator manufacturing plant must employ new ideas, layouts, and techniques to produce better refrigerators.

When Hotpoint decided to build its new refrigerator plant, it made another decision at the same time. This new plant would be equipped to build "tomorrow's refrigerator today." Almost all of the equipment would be new. Some of the equipment would be designed to perform certain specific tasks in the production of a refrigerator in a way that had never before been used.

While Hotpoint's prime objective in designing and building the new refrigerator plant is to produce the best refrigerator possible, there were other considerations involved in plant layout and design. These other considerations included such matters as efficiency of plant operation, effective handling of materials, welfare and safety of employes, and crating and shipping methods that would permit shipping of mixed carloads of appliances to distributors of products that were properly crated and packaged.

This new refrigerator manufacturing facility, located in Cicero, Illinois, occupies about 1,000,000 sq. ft. of floor space. The cooling system plant is laid out so that raw materials such as steel, copper, and aluminum items

(Continued on Page 13, Column 5)

Arkansas Utility Ends Sales to Its Employes

LITTLE ROCK, Ark.—After conferences with representatives of retail organizations, Arkansas Power & Light Co. announced that it will discontinue direct selling of electrical appliances to employes.

The conferences were arranged by the Arkansas Furniture Association. Also taking part were the Appliance Retailers of Little Rock and the Retail Hardware Dealers of Arkansas.

Retailer representatives promised that stores handling electrical goods would now intensify their sales promotional efforts. C. Hamilton Moses, chairman of the board of the utility, offered dealers the services of his entire staff in their promotional programs.

'Moonlighters' Hit

Buffalo Assn. Says Code Should Cover Heating

BUFFALO — A warning against "moonlighters"—unqualified men who install heating equipment as a sideline—was issued by Merton Anderschott, president of the Buffalo Warm Air Heating Association, before a special subcommittee of the Common Council holding hearings on the city's proposed Flammable Liquids Code.

Anderschott, who endorsed the code, told the committee it should be extended to cover the heating industry and to provide for licensing of heating-equipment installation men. He said the city now has no such code, although 25 major cities have enacted such codes.

The committee scheduled a meeting of representatives of the heating industry, the corporation counsel, and the Fire Prevention Bureau to explore the possibility of such an extension of the code.

CHECKING OVER THE FIRST NEW 7-CU. FT. 1954 REFRIGERATOR model to be manufactured in the Hotpoint Co.'s new multi-million dollar refrigerator plant are John C. Sharp (left), president, Hotpoint Co., and John F. McDaniel, vice president—marketing. Top production in the industry's newest manufacturing facility will be one complete refrigerator every 40 seconds.

Hussmann 9-Month Sales Reported at $23,941,160

ST. LOUIS—Nine month sales of Hussmann Refrigerator here, a leading manufacturer of commercial refrigerator equipment, totaled $23,941,160, for the first nine months of this year, compared with $14,780,108 for the same period in 1952.

Net income after taxes and charges for the nine months' period was $1,290,164, compared with $821,609 for the same period a year ago.

Net sales in the third quarter of 1953 were $7,236,556, compared with $5,231,947 for the third quarter of 1952.

Bell & Gossett To Acquire Marlow Pumps on Dec. 1

MORTON GROVE, Ill. — Bell & Gossett Co. here, manufacturer of air conditioning and heating equipment and components, will acquire Marlow Pumps of Ridgewood, N. J. on Dec. 1.

A Bell & Gossett official estimated the new division will increase the company's production facilities by

Proposed 1953 B9 Code Will Exempt Cars

Changes Also Made In Relief Device Rules For Pressure Vessels

NEW YORK CITY—Several changes have been incorporated in the proposed 1953 revision of the B9 Safety Code for Mechanical Refrigeration as submitted by the American Standards Association Sectional Committee.

Most changes over the 1950 version are of an "editorial" nature intended to clarify intent of the code. Different requirements, however, are set up for pressure vessel relief devices, and refrigeration systems for automobiles are specifically exempted.

Designated as ASA B9.1-1953, the proposed code will not become official until approved by the American Standards Association and the council and membership of the American Society of Refrigerating Engineers, the sponsoring organization.

Such approval is likely to be automatic because the sectional committee which prepared the proposed revision includes representatives from these and 36 other groups.

New in the 1953 version is the statement that the code is not intended to apply "to refrigerating systems installed on railroad cars, motor vehicles, motor drawn vehicles, or on shipboard."

This, of course, exempts automobile air conditioning.

A new refrigerant also appears in the code. Carrene No. 7 has been included in Group 1 refrigerants.

Section 13, which is devoted to "Relief Devices for Pressure Vessels," has been completely rewritten.

The chief change here both liberalizes and further restricts use of fusible plugs, spring-loaded relief valves, and rupture members on pressure vessels, such as receivers.

Pressure vessels of 3-cu. ft. gross volume or less, but 3 in. i.d. or over, must have either a fusible plug or a pressure-relief device (spring-loaded valve or rupture member).

Vessels over 3 cu. ft. but less than

(Concluded on Back Page, Column 1)

Don Petrone Named Typhoon President

NEW YORK CITY—Don V. Petrone has been named president of the Typhoon Air Conditioning Co., Inc., according to an announcement following a recent meeting of the Typhoon board of directors in New York. J. F. Dailey, former Typhoon president, was elected to the newly created office of chairman of the board.

Don V. Petrone

Born in New York city, Petrone is a graduate of New York university. He joined Typhoon in 1935, starting first in the engineering department and later transferring to sales. In 1939 he was appointed to Typhoon's export depart-

(Concluded on Page 45, Column 5)

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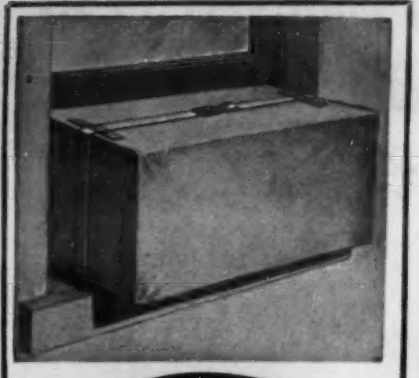


Tucapco
AIR CONDITIONER PROTECTOR

The Best Air Conditioner Cover on the market . . .

- Made for Rugged Weather —Storm-proofed.
- Tailored to fit — Strong finished seams.
- Adjusts to fit any air conditioner.
- Quickly installed.
- Prevents cold draft through air conditioner.

Here is the Air Conditioner Protector that SELLS because it is styled better and made better to protect the large investment in expensive units. Write for complete information.

TULSA CANVAS PRODUCTS CO., INC.
1217 EAST 4TH ST.
TULSA, OKLAHOMA

Machines In Operation Will Show Variance Between 'F-12' and 'F-22'

WILMINGTON, Del. — A push-button display built around two operating refrigeration compressors will be used by the Du Pont Co.'s "Kinetic" Chemicals Division to demonstrate characteristics of different refrigerants at the Eighth All-Industry Refrigeration and Air Conditioning Exposition in Cleveland, Nov. 9-12.

The exhibit will enable visitors to operate simultaneously two refrigeration machines, one employing "Freon-12" dichlorodifluoromethane and the other using "Freon-22" monochlorodifluoromethane. Sets of twin dials, pushbutton operated, will show head pressures and temperatures, suction pressures and temperatures, motor horsepower, and capacities in B.t.u.'s per hour for each of the machines. All these factors are important in designing compressors and evaporators for specific applications.

Other portions of the Du Pont exhibit, to be located in Booth *631* in the Cleveland Public Auditorium, will outline characteristics of the various "Freon" fluorinated hydrocarbon refrigerants, quality controls involved in their manufacture, and the numerous technical services provided users of the Du Pont products. Separate panels will describe interesting applications of the "Freon" refrigerants and Du Pont's program for helping broaden the market for refrigeration and air conditioning equipment.

Du Pont personnel attending the Exposition will include E. M. Fanning, assistant director of sales of the "Kinetic" Chemicals Div.; R. L. Williams, manager of refrigerant sales to manufacturers; A. H. Lawrence, Jr., technical sales service manager; Charles Wirth III, manager of wholesale distribution, and the following sales representatives: F. E. Cooper, Detroit; P. M. Dahlen, Des Moines; T. J. Amann, Memphis; J. H. Dowling, Chicago; W. L. Hotmer, New York City, and R. B. Sangston, Wilmington.

Toronto Street Cleaners To Wreck Old Iceboxes

TORONTO, Ont., Can.—Employes of the city street cleaning department have been ordered to destroy all discarded iceboxes which they find or are reported to them by citizens, Grant Taylor, deputy streets commissioner, said.

Following up a directive of Con. Leslie Saunders, Taylor said his men will watch for unused iceboxes, investigate their ownership, and then, if necessary, cart them away for disposal.

Con. Saunders will ask the board of control to approve the order to eliminate all outdoor iceboxes.

Taylor said there are many such unused iceboxes cluttering up backyards and lanes in Toronto. Many people, he said, buy a new refrigerator and toss the old one into a junk heap at the back of the lot because they do not want to go to the expense of carting it away.

Normally, the streets department does not dispose of such large objects.

'Ladies Home Journal' Offers Grocers Some Suggestions on Catering to Freezer Owners

PHILADELPHIA — An idea for establishing a "Home Freezer Supply Day" and increasing business with consumers who want to buy frozen foods and meats in quantity was offered to grocers recently by the promotion department of the *Ladies Home Journal*.

The suggestion was made through the Journal's "Roger Bell Plan." This is a monthly kit of merchandising aids for chain supermarkets and large independent food retailers. It is sent on request to some 1,700 grocery operators controlling more than 135,000 stores throughout the country.

The promotional piece on the home freezer supply program declared: "The home freezer idea is now well established. We think the time to move in has arrived. The fly-by-night suppliers of meats and frozen foods at 'wholesale prices' have folded. Sensible women will now depend upon the regular well established retailer to fill their freezers."

The piece credited Tom Millott, food freezer sales manager for the General Electric Major Appliance Div., as suggesting that grocers:

1. Establish Tuesday as home freezer supply day as a possible boost to early-in-the-week business.

2. Use a small slug in both regular and special advertising drawing attention to the "recommended home freezer special."

Outlining the idea in the words of "Roger Bell," a mythical supermarket chain operator who is presenting the plan to his store managers, the *Journal* promotional piece says:

"Up to now we have been hesitant to go into this thing in a big way . . . because we felt we needed store traffic all the time. We were afraid that stocking home freezers would cut down shopping trips to our big markets.

"We've come to the conclusion that the more food people have in the house the more they eat. . . . We found long ago that when we put on a fall canned goods sale, it doesn't hurt our regular week-after business so much. So we've decided that we can't go wrong by getting behind any program that puts more food in the home whether in the pantry, the refrigerator, or the freezer . . .

"We will run special ads featuring 'Recommended home freezer specials' right along with our regular weekly advertising. This special price will be just as good for the woman who wants to buy a single cut for immediate use. But, of course, without a home freezer she can only buy one, so the lady with the freezer really has an advantage.

"Our efforts are certain to be a good advertisement for the appliance dealers. More women will buy home freezers when they know an efficient source of supply is near by . . .

"Because we are putting special well organized effort behind this program we are sure to gain the favorable attention of appliance dealers who sell all brands of home freezers . . . We are not selling appliances. We are selling what goes into the freezers. That's our business.

"The food freezer is of no value without a convenient source of food available in quantities. Good food sources are to a freezer what good roads are to the automobile."

Lehigh Air Conditioning Conference Proceedings Have Been Published

BETHLEHEM, Pa. — Proceedings of the technical conference on year-round residential air conditioning held last April at Lehigh university have been published. Professor James V. D. Eppes, conference director, edited the volume.

The published volume includes the technical papers presented during the two-day conference. Among the topics covered are: technical aspects of modern residential construction, a review of the American Society of Heating & Ventilating Engineers' research program, load calculations for residences, problems of control and operation of air conditioning systems.

Copies of the volume may be secured from Lehigh university.

Conditioner Aids Japanese Pharmaceutical Concern

MINNEAPOLIS—Heightened interest in air conditioning in Japanese pharmaceutical circles has resulted from a new application of upright self-contained equipment by Yamaneuchi Pharmaceutical Co. of Tokyo, United States Air Conditioning Corp. announces.

Control of temperature, humidity, and dust in a room utilized for sterilized ampule filling has been effected by the company through the use of a UsAirco 10-ton store unit in conjunction with "Electro-Matic" air filters, manufactured by American Air Filter Co., Inc., according to the report.

The installation was announced by Takeo Wanatable of the Shinwa Trading Co., Inc., Toyko representative for UsAirco and American Air Filter.

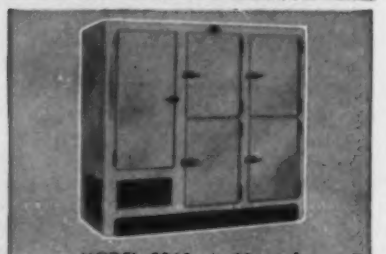
MODEL 707. Low and wide, this self-service case can be serviced front or back. Can be joined for endless display.

MODEL 6710. 10 ft. long open front case with extra wide display shelf. Ideal for produce display.

SERIES 3100. Endless top display cases, 7 and 10 ft. long. Set up in any length for profit displays.

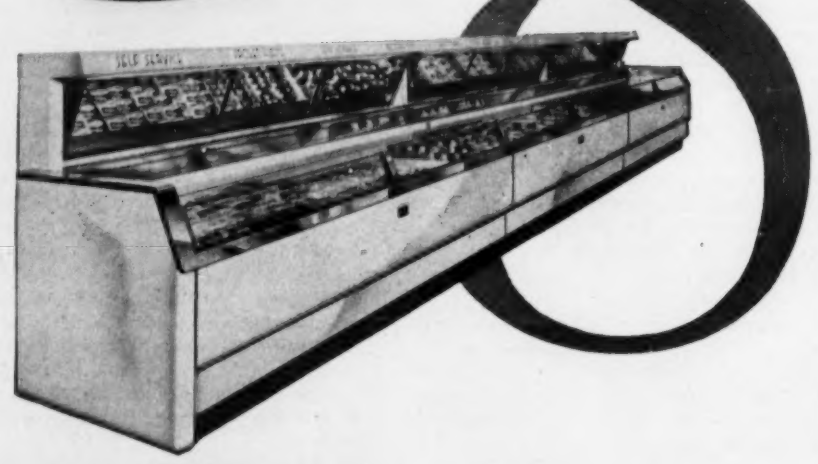
MODEL 306. The sensational open case with THREE refrigerated shelves. For profit-making impulse sales.

MODEL 1407. Self-service frozen food display case. Attracts and handles more buyers, invites more sales.



MODEL 3865. A 65-cu. ft. reach-in refrigerator. One of the four popular Koch reach-in cabinets.

Endless Beauty!
KOCH FROZEN FOOD DISPLAY CASES
with Automatic Defrosting - 8



Each attractive well-lighted 10-ft. section of the new Koch self-service display case holds 1400 average packages of frozen foods . . . 23½ sq. ft. of selling area are offered to the eye and hand of the customer. Placed end to end, the cases form a dazzling display that compels shoppers to look — and BUY.

Temperature is constant — end to end, top to bottom. There is never any frost in the display compartment . . . and famous KOCH FIGURE 8 AUTOMATIC DEFROSTING is foolproof. It defrosts COMPLETELY and water is gone in 10-20 minutes . . . with NO defrost and NO warmup in the display compartment.

Copper-back mirror canopy optional for extra "come hither."

SINCE 1883 KOCH refrigerators, inc.
NORTH KANSAS CITY 16, MO.

SEND THIS COUPON today FOR FULL DETAILS

For Complete Information about Franchise Availabilities, Write or Wire Today!

KOCH Refrigerators
North Kansas City, Mo. ACRN-10

Please send me at once, without obligation, complete information on profit-making Koch Refrigerators and Display Cases.

Name_____

Address_____

City_____ Zone____ State_____

OPPORTUNITY

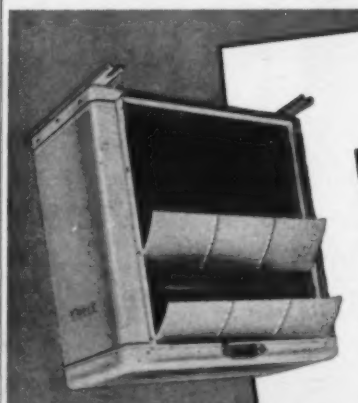
$14,000.00 POSITION WITH PROMINENT NATIONAL MANUFACTURER

QUALIFICATIONS AND EXPERIENCE REQUIRED:

1. Packaged air conditioning know-how, including salesmanship, engineering, and application.
2. Ability to properly appoint new dealers, train and develop dealer personnel, and maintain and assist present dealers in accordance with factory policy.
3. Personality, diplomacy, and business acumen.

Replies will be kept strictly confidential and will be answered. Submit complete details of qualifications, experience, and recent snapshot.

Send Replies to Box 4406, Air Conditioning & Refrigeration News



Kay-Tee
UNIT COOLER
by
KRAMER

offers more BTU's for less money as a result of extensive engineering advances and the development of KRAMER'S newly patented fin and tube construction.

Write for Catalog R-225

In seven sizes, 2,500 to 12,000 BTU's per hour

KRAMER TRENTON CO. • Trenton 5, N.J.

Dealer Originates Bridal Shower Radio Program from Store

BUFFALO—A new merchandising idea, called "A Shower For the Bride," was unveiled at Delgato's Appliances under the direction of Ken Kaplan, Buffalo advertising executive and originator of the plan.

Kaplan has formed a new company to promote his "A Shower For The Bride" program. It is known as "Ken-Plans For Productive Merchandising of Consumer Products."

The promotion is built around a gift-giving radio show, staged in the new kitchen auditorium at Delgato's Appliances which has a seating capacity of 150.

The radio show is broadcast five nights weekly over a Buffalo station from 10:30 p.m. to 11:30 p.m. Every night a different bride-to-be from the western New York area is guest of honor on the program. She and her fiance are interviewed and showered with gifts. Participating manufacturers get their share of publicity.

The program actually takes place at 7:30 p.m. in the Delgato auditorium and is recorded for broadcast three hours later. Relatives and friends of the bride and groom are invited to attend the recording program. Professional entertainment is included in the show.

Visitors are exposed to merchandise displays in Delgato's appliance store as they approach and leave the auditorium. Thus, the promotion accomplishes its primary purpose of building traffic for the appliance firm.

Kaplan said initial response has been "excellent." The auditorium was filled to capacity on the first several nights and the program is booked up five weeks in advance with prospective brides who want to take advantage of the gift opportunities.

Brides-to-be from all parts of western New York are invited to write in for a chance to appear on the program.

"The program already has brought many new customers to Delgato's," said Kaplan. He gave this background for his promotional plan:

"To increase sales today, you have to do more than merely advertise; you have to merchandise, humanize, and personalize your company, products, and service. This is exactly what our 'Shower For The Bride' merchandising plan will do as will three other plans we have in the mill right now.

"Our plan guarantees from 500 to 1,000 women store traffic per week, dependent upon the market classification we are working in."

Body Engineers To Hear Talks on Auto Cooling

DETROIT — Automobile air conditioning will be discussed at one session of the annual technical convention of the American Society of Body Engineers which runs from Oct. 28 through 30 at the Rackham Memorial Bldg. here.

Two formal talks are scheduled for the air conditioning session, which starts at 2 p.m. Friday, Oct. 30.

"Cooling the Rocket—or, Air Conditioning the Oldsmobile" is the topic of E. M. Estes, chief body engineer of GM's Oldsmobile Div., and Franklin W. Edwards, Detroit sales manager of Eaton Mfg. Co., will discuss "Package Air Conditioning for Your Car."

Chairman of the session will be Henry S. Kawecki, assistant chief body engineer of Cadillac.

HACO
PROTECTIVE COVERS
for **Air Conditioners**

HACO COVERS
- Available in two sizes, large and small.
- Made of Finest Quality Waterproof Materials.
- Sturdily constructed—seams are tear resistant.
- Easily installed—no fittings or stiffeners required.
- *Fast selling*—and *profitable.*

WRITE or TELEPHONE IMMEDIATELY
SKyline 1-3959
HEIGHTS Air Conditioning Cover Co.
3687 HILDANA CLEVELAND 20, OHIO

Friedrich Names National Manager for Cooling Sales

SAN ANTONIO, Texas — Brent Oberer has been appointed national sales manager of the Friedrich "FloatingAir" Air Conditioning Div. of Friedrich Refrigerators, Inc., it was announced recently by R. L. Harrison, executive vice president and treasurer of the company.

Oberer will head an extensive organization for the sales of Friedrich air conditioners. In this connection, it was pointed out that Friedrich Refrigerators, Inc., will in 1954 enter into its fourth year in the air conditioning field.

Carrier Holders Subscribe To 98% of New Offering

SYRACUSE, N. Y.—A 98.2% subscription of its offering of 278,422 shares of common stock to present holders has been announced by Carrier Corp.

The new issue was offered at a price of $31.75 per share on the basis of one new share for each four held.

As previously announced, net proceeds from the financing will provide the major portion of the capital required for a $10 million expansion program involving the construction of a new plant in the southern part of the country and large-scale additions to the present facilities of the corporation in Syracuse.

Sell 100,000 Shares of UsAirco Common Stock

NEW YORK CITY—Mortimer B. Burnside & Co., Inc. and George F. Breen, underwriters of a public offering made recently of 100,000 shares of U. S. Air Conditioning Corp. common stock, announced that these shares were all sold.

The company's outstanding shares are listed on the American Stock Exchange.

Funds received from the financing will be used by the company to help finance its expanding volume of business, which has shown about one-third increase during its current fiscal year compared with last year, it was said.

Four New Distributors Appointed by McCray

KENDALLVILLE, Ind. — McCray Refrigerator Co., Inc. announces the establishment of four new distributorships to handle its commercial refrigerators and home freezers.

They are Kiesel's Co., Salina, Kans.; A. J. Ashley, Lafayette, La.; Andrews Refrigeration Service, Pineville, La.; and Modern Refrigeration Service, Billings, Mont.

Ken Kiesel plans to build an organization to distribute McCray products in 16 Kansas counties.

Ashley will have exclusive selling privileges in eight parishes in Louisiana. A. B. Andrews and his organization will operate in the eight Louisiana parishes around Pineville.

Modern Refrigeration Service, headed by M. M. Brown, will sell 23 Montana counties and 10 Wyoming counties.

McCray said these new distributors are offering its products to retail food merchants and other users, and also freezers direct to homeowners or through freezer-food plans.

Sells, Salamone To Direct American-Standard Units

PITTSBURGH—Robert F. Sells has been appointed general manager of branches of American Radiator & Standard Sanitary Corp., and Joseph Salamone has been named manager, branch house operations, it was announced by Joseph A. Grazier, acting president of the corporation.

Prior to his appointment, Sells was supervisor of the branch house department's northern division with offices in Chicago. Salamone formerly was general manager of sales of the plumbing and radiator heating division of American-Standard.

Sells and Salamone will direct the operations of the 80 American-Standard branch houses located throughout the country. These are wholesale distributing units handling plumbing, heating, air conditioning, and kitchen products, as well as a wide variety of industrial supplies.

Robert W. Lang, who was formerly general manager of branches, will continue to serve as a vice president of American-Standard.

VERTICAL . . HORIZONTAL . .

ANY WAY YOU INSTALL 'EM . .

ANSUL T-*FLO* DRIERS . . WITH ANDRITE, THE *HIGH-SPEED* DESICCANT,

PICK UP MOISTURE *FASTER* AND *HOLD MORE* MOISTURE THAN ANY OTHER REFRIGERANT DRIER

HOW DRY, HOW DRY, HOW DRY SHOULD A REFRIGERANT BE? . . . so dry that there can't possibly be a chance of trouble from moisture. For instance, "Freon-12" should contain no more than a maximum of ten parts moisture per million parts refrigerant. Any more than that and "Freon-12" is dangerously wet.

Below is a comparison of the drying effectiveness of *Andrite* and three other leading desiccants; showing how *Andrite* removes moisture to four p.p.m.

The above tests were made on a refrigerating system charged with methyl chloride containing 500 P. P. M. of moisture. Each test ran for eighteen hours at 140° F.

The new Ansul T-*FLO* Refrigerant Drier . . . with *ANDRITE* . . . has already established new high performance ratings for efficiency, capacity and rate of moisture pickup. It is easy to install and much easier to replace than conventional types of driers.

ANDRITE, the new High-Speed desiccant in ANSUL T-*FLO* DRIERS is in the form of uniformly-sized beads or spheres. It is the ONLY desiccant which provides ALL of the following advantages:

- Greatest Filtration.
- Least pressure drop.
- Will not cake.
- Will not dust.
- Will not channel.
- Will not break down.
- Dries even at high temperatures.
- Can be used with any refrigerant.
- Is non-corrosive.
- Removes acid.

Ansul T-*FLO* driers are sold through Refrigeration Wholesalers exclusively.

ANSUL Chemical Company
REFRIGERATION DIVISION • MARINETTE, WISCONSIN
MANUFACTURERS OF REFRIGERATION PRODUCTS, INDUSTRIAL AND FINE

IMPORTANT FACTS ABOUT

...the great

MANUFACTURERS, WHOLESALERS, SERVICEMEN:

A YEAR AGO, General Chemical announced its entry into the refrigeration and air conditioning field as a primary producer of the two big "work horse" fluorine refrigerants: trichloromonofluoromethane and dichlorodifluoromethane—under the trademarks "Genetron" 11 and "Genetron" 12.

THIS WAS HIGHLY SIGNIFICANT NEWS. Until then, there had been only one manufacturer of these two basic refrigerants which are so essential to the Industry's existence.

WITH THIS SUBSTANTIAL NEW SOURCE, a strong, well-balanced supply exists for the first time. Now there will be sufficient productive capacity to serve all your refrigerant needs —both present and future.

EQUALLY IMPORTANT, you no longer face the hazard of crippling shutdowns that arises when there is a single producer of a primary component material. Instead, your interests are well protected, for not only is there a sound supply situation, but with it has come freedom of choice and assurance of superior product quality and fine service that always follows in the competitive American market.

SUCH FACTS ARE VITAL TO YOU whether you are a manufacturer, wholesaler or serviceman. Because of the importance of "Genetron" refrigerants to the Industry, many sound, logical questions have been asked about them and their producer.

Here are the answers:

genetron® • • •

new name in basic refrigerants

HERE IS A MESSAGE OF VITAL INTEREST TO YOU!

Who is General Chemical?

For over fifty years, General Chemical has been one of the nation's largest manufacturers of basic industrial chemicals, including sulfuric and hydrofluoric acids. It has almost 100 producing and operating locations across the country.

What is its background in Fluorine Chemicals?

A pioneer in the field, General Chemical is recognized as Industry's primary source of fluorine chemicals. It makes more than 90 organic and inorganic fluorine compounds for industrial and research applications, including the atomic energy program.

Is it qualified to make products of the high purity required in refrigerants?

Definitely. General Chemical also makes the country's leading line of high purity laboratory reagents and fine chemicals. Under its Baker & Adamson label, it offers over 1,000 such products—all made to meet quality specifications of "decimal point" exactness.

What is its raw materials position?

Ideal. General Chemical not only has its own mines and reserves, but is the foremost producer of hydrofluoric acid and elemental fluorine from which virtually all fluorine chemicals are made.

Where are "Genetrons" made?

At Baton Rouge, La., in one of the newest, most modern fluorine refrigerant plants in America.

What kind of service can I expect?

The best. General Chemical has 27 sales offices in major centers of commerce to serve you and handle your orders.

Does General also have regional warehouse stocks?

Yes. Stocks of "Genetron" refrigerants are at General Chemical warehouses at key points across the country.

Are the "Genetrons" "new" refrigerants?

No. "Genetron" 12 is the widely used refrigerant, dichlorodifluoromethane. This chemical has long been the mainstay of the refrigeration and air conditioning industry. "Genetron" 11 is trichloromonofluoromethane, the second of the big "work horse" fluorine refrigerants.

Are "Genetrons" interchangeable?

Absolutely. "Genetron" 12 and "Genetron" 11 are identical and interchangeable in all respects with dichlorodifluoromethane and trichloromonofluoromethane produced by any manufacturer meeting the same high refrigerant standards.

Are "Genetrons" approved?

Certainly. "Genetron" refrigerants have been tested exhaustively by major manufacturers of refrigeration and air conditioning equipment in their own laboratories and are being used in their equipment.

What about their moisture content?

It's extremely low! General Chemical's special methods for producing "Genetron" refrigerants are so exacting that their quality is consistently better than indicated by these stringent manufacturing specifications:

	"Genetron" 12	"Genetron" 11
Moisture-wt. % max.	0.0010	0.0025

Is overall purity good?

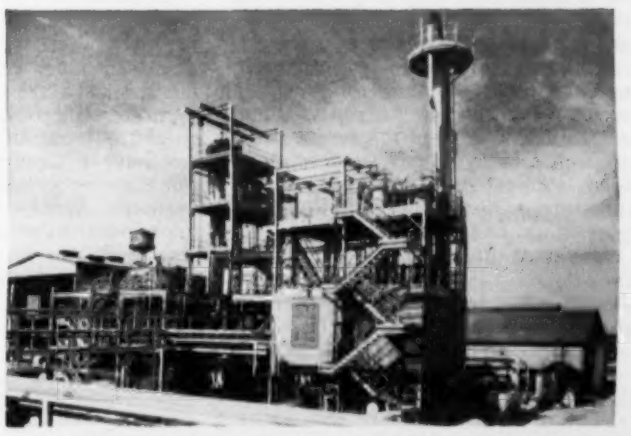
Yes, it's the highest! The "Genetrons" are extremely pure chemicals manufactured to meet quality standards which are in many respects more rigid than those for the purest research chemicals.

What container sizes are available?

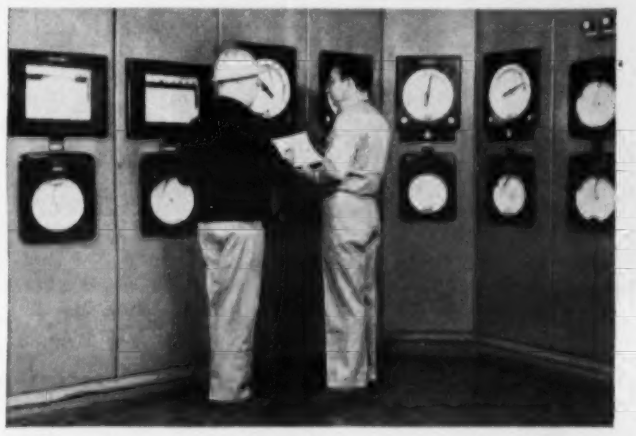
"Genetron" refrigerants are offered in the various standard container sizes required by manufacturers and wholesalers. "Genetron" 12 is shipped in 2,000-lb., 145-lb., 25-lb., and 10-lb. cylinders; "Genetron" 11 in 2,200-lb. cylinders and 200- and 100-lb. drums.

For further information

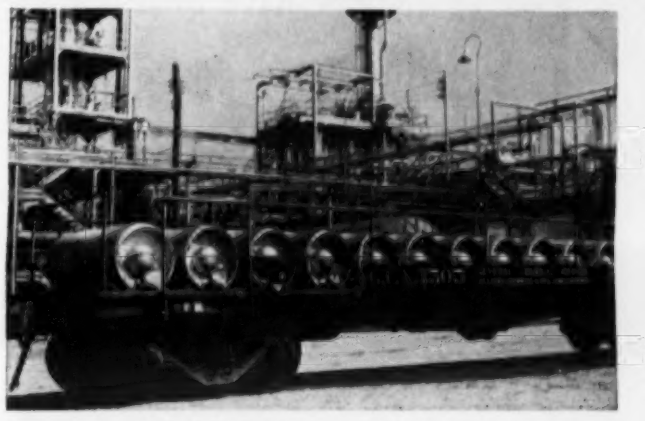
about "Genetron" refrigerants write or 'phone the nearest General Chemical office listed below.



General Chemical's "Genetron" plant located at Baton Rouge, La., is one of the newest, most modern fluorine refrigerant plants in America.



Section of Process Control Room. Production of fluorine refrigerants is extremely exacting and requires specialized knowledge of fluorine chemistry to produce gases of the high purity necessary for modern refrigeration and air conditioning equipment.



Ton cylinders of "Genetron" 12 ready for shipment. "Genetron" refrigerants are offered in the various container sizes most suited to the needs of refrigeration and air conditioning equipment manufacturers, suppliers and service organizations.

Products of

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Offices: Albany • Atlanta • Baltimore • Birmingham • Boston • Bridgeport • Buffalo • Charlotte • Chicago Cleveland • Denver • Detroit • Greenville (Miss.) • Houston • Jacksonville • Kalamazoo • Los Angeles • Minneapolis New York • Philadelphia • Pittsburgh • Providence • San Francisco • Seattle • St. Louis • Yakima (Wash.)
In Wisconsin: General Chemical Company, Inc., Milwaukee

Allied Chemical

America's Foremost Producer of Fluorine Chemicals

These Salesmen Up In Air Over Their Prospects

BREMERTON, Wash. — Ingenuity in searching out prospective buyers of heating equipment has reached a new high here.

The three salesmen of Lent's, local plumbing and sheet metal contracting firm, scout for prospects from an airplane!

By flying low over their territory, the salesmen can easily spot new building starts. Then they shift to conventional automobile transportation to contact the prospects directly.

The firm, which handles General Electric heating equipment, reports that this unusual method of prospecting is paying off nicely in boiler and furnace sales.

Lockport To Enforce New 'Death Trap' Ordinance

LOCKPORT, N. Y. — Any stored icebox in Lockport not in use must be either bolted from the outside so it can't be opened or the locking mechanism must be removed.

This is provided in an ordinance adopted by the Common Council on recommendation of Mayor William A. Maillet, who cited the recent wave of accidents in which children have been suffocated when they locked themselves accidentally in old refrigerators and iceboxes.

Mayor Maillet said he will direct the Police Department to make a survey of the city for discarded or stored iceboxes and see that the ordinance is rigidly enforced.

Schafer-Wright Distributes Youngstown Kitchens Line

WARREN, Ohio—The appointment of Schafer-Wright, Inc. as distributor of Youngstown Kitchens in the Portland, Ore. area is announced by C. D. Alderman, vice president in charge of merchandising for the kitchen equipment firm.

Established in 1951, Schafer-Wright is headed by Ward R. Schafer, former sales vice president for Hotpoint who was vice president and general manager for Coolerator before he joined Stanley Wright in establishing the Portland distributorship.

Wright, vice president of the firm, is president of Wright's, Ltd. of Vancouver, B. C. and is also active in a variety of other business lines in Canada.

Schafer-Wright has established a Youngstown Kitchens division, headed by Herschel Johnson.

Home Trial Offer Boosts Firm's Dishwasher Sales

BUFFALO — Bestway Stores here boosted electric dishwasher business recently by offering to wash dishes in any Buffalo area home without charge on a free-trial deal.

Interested prospects were invited to call one of the six Bestway stores and have a General Electric automatic dishwasher sent out on a trial basis. It offered to deliver the unit to the home the same day the phone call was made.

"If you decide to keep it after your free home trial," the advertisement said, "you pay no money down—just $3.25 a week."

Building Permits Continue High, Valuation Up 18%

NEW YORK CITY—A key indicator of the sales potential for air conditioning equipment is the volume of building permits — which continues high.

Dun & Bradstreet reports that permit valuations from 215 U. S. cities, for residential and non-residential construction, were up 18% in the first eight months of this year as compared to the same period in 1952.

Building permits for last August showed a sharp drop from July, but were still ahead of August, 1952.

The relation between the favorable trend in building permits and opportunities in the air conditioning field is a close one, Dun & Bradstreet says. Permits for remodeling as well as new construction are included in the eight-month total of 3½ billion dollars, and an increasing percentage of new building and remodeling calls for year round air conditioning.

Against this optimistic picture, Dun & Bradstreet notes that failures among air conditioning, plumbing, and heating contractors for the first eight months of this year have increased 21% in number over the same period of last year and have also increased in total liabilities.

Excise Tax Collections Up In July from Year Ago

WASHINGTON, D. C.—Collections of excise taxes from manufacturers of mechanical refrigerators, air conditioners, and home freezers in July rose to $9,573,000 from $6,164,000 a year ago, the Internal Revenue Dept. announced.

"BEST OF INDUSTRY" awards for top campaigns were awarded to two companies in the air conditioning field by the Direct Mail Advertisers Association. Winner in the industrial class, Minneapolis-Honeywell's Marvin Morrell (above left) accepts certificate from Geo. H. Alarik. In the consumer field, winner James & Roach, Detroit Carrier distributor, is represented by Dalton H. Fox (below left).

M-H, James & Roach Take 'Best of Industry' Awards At Direct Mail Conference

DETROIT — "Best of Industry" awards for their 1953 campaigns were presented to Minneapolis-Honeywell Regulator Co. and James & Roach, Inc., at the 36th annual conference of the Direct Mail Advertising Association, Inc., held here.

Honeywell came off first in the "heating, ventilating, and air conditioning" class for its direct mail activities in the "industrial" field.

In the same class, but limited to "consumer" campaigns, first place went to James & Roach, distributor for Carrier in the Detroit area.

This is a repeat for James & Roach. Last year's direct mail campaign, also developed by Dalton P. Fox of the distributing firm, was first in its industry. In that contest no distinction was made between "industrial" and "consumer" campaign in judging the campaigns.

In all, 60 awards for winning direct mail campaigns were made in the 25th annual competition. Winning campaigns were selected in 55 industrial classifications, together with five winners in a "special low cost campaign" category.

Springfield Concern Named By Westinghouse A.C. Div.

HYDE PARK, Mass.—The Simons Burner & Petroleum Corp. of Springfield, Mass., has been awarded a franchise as distributor for Westinghouse self-contained air conditioning equipment, according to W. B. Cott, sales manager of Westinghouse Electric Co.'s Air Conditioning Div.

Saul Simons, owner and operator of the firm, has been identified with the heating and air conditioning industry since 1938.

Norge Extends Deadline For Cook's Saw Orders

CHICAGO—To accommodate additional orders, Norge has announced an extension until Nov. 30 of the deadline date for ordering its cook's saw give-away for dealers.

According to David H. Kutner, director of advertising and public relations for Norge Div. of Borg-Warner Corp., orders for saws from distributors have been heavy, reflecting the item's popularity. The previous order deadline was Sept. 30.

The red plastic saw carries a 6-in. hacksaw blade, replaceable at hardware stores, and the dealer's imprint. Kutner reported the saw is proving handy to build up interest in freezers, since the saw is ideal for cutting frozen food.

Other uses for the saw include cutting soup bones, meats, poultry, and ice cream.

J. R. Watt Joins Thor's Building Contractor Div.

CHICAGO — Thor Corp. has announced the appointment of J. R. Watt as a member of the Building Contractor Div.

For the past 18 years, Watt has been employed by the Hearst newspapers in Chicago, serving most recently in the dual capacity of real estate editor and real estate display advertising manager.

Thor's general sales manager, Thomas R. Chadwick, said Watt will operate under Fred Rexford, vice president in charge of sales for Leeson Steel Products.

Why Victor Dealers are happy in this "Buyer's Market"

When merchandise has to be SOLD—When mere "order takers" are insufficient—When real SALESMEN have to take over and do a bang up job of honest-to-goodness old fashioned SELLING...

PRODUCTS *with superior features...like* Victor
PRODUCTS *of greater value .....like* Victor
PRODUCTS *with important pluses....like* Victor

Are The Easiest to Sell
The Most Profitable To Push!

● IN VICTOR UPRIGHT QUICKFREEZERS • IN VICTOR CHEST-TYPE QUICKFREEZERS
IN VICTOR DEHUMIDIFIERS • IN VICTOR AIR CONDITIONERS

Write FOR PROOF • LEARN THE EXTRA ADVANTAGES OF GETTING A VICTOR FRANCHISE *Today!*

VICTOR PRODUCTS CORPORATION, HAGERSTOWN, MARYLAND
Gentlemen: Please send complete details on the Victor products checked.
☐ Upright Quickfreezers ☐ Chest-Type Quickfreezers ☐ Air Conditioners ☐ Dehumidifiers ☐ Beverage Coolers ☐ Milk Coolers ☐ Self-Service Frozen Food Merchandisers ☐ Ice Makers ☐ Sterilizers ☐ Walk in High Temperature, Low Temperature Rooms ☐ Reach-in Refrigerators ☐ Triple Deck Merchandisers ☐ Self-Service Cases ☐ Service Cases
Name _____ Address _____ City _____ State _____

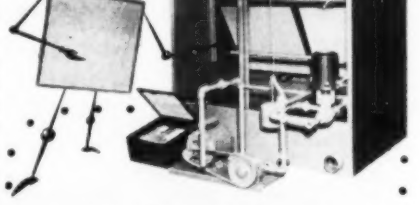
GREATER PROFITS WITH THE Moisturizer VEGETABLE CASE

AVAILABLE IN 5'- 8'- 10' SIZES

IF ITS NOT A NOLIN ITS NOT A MOISTURIZER

NOLIN MANUFACTURING COMPANY
1691 LLOYD STREET MONTGOMERY, ALABAMA

Only FAR-AIR* gives you completely automatic air filtration with all these advantages!



FAR-AIR Self-Washing filters clean air better . . . provide these automatic features, too!

Washing, drying and oiling is controlled electrically on a predetermined time schedule...*automatically!* Air cleaning efficiency remains constant. There is no liquid particle entrainment.

Water and dirt are flushed directly to sewer . . . *automatically!* There is no messy oil sump to collect sludge and create a fire hazard. Maintenance man-hours are reduced. Built-in controls guard against fire . . . *automatically!*

These are Far-Air features:

No entrainment
No sludge—no oil sump
Automatic fire control
Minimum maintenance
Easy installation

FAR-AIR Self-Washing filters give you more efficient, more dependable service. That's because FAR-AIR's exclusive herringbone-crimp media design permits progressive loading and free air flow. Find out today about completely *automatic* air filtration.

MAIL COUPON NOW FOR COMPLETE INFORMATION

FAR-AIR FILTERS "Better by Farr"

*Trade Mark Reg.

FARR COMPANY
Manufacturing Engineers
CHICAGO • LOS ANGELES • NEW YORK
Mf'd under license by Control Equip. Co., Ltd., Montreal, Canada

Farr Company, P. O. Box 10187 Airport Station Los Angeles 45, California
Please send me information on FAR-AIR Self-Washing filters. I would ☐ would not ☐ like a Farr Field Engineer to discuss my air filtration problem with me.
Name _____ Company _____ Address _____

Atom-Power Seen A Possibility for 1975 Refrigerator

CHICAGO—The refrigerator of the future may be atomic-powered and may bear little resemblance to the present-day gleaming white upright kitchen appliance.

That's the opinion of Mrs. Vivian Overand, director of home economics for Admiral Corp. She believes that deluxe refrigerators in 1975 may not have a handle on the door and will open automatically whenever the homemaker activates an electric eye. Thousands of units in a city may be powered by a single atomic pile.

"It isn't too far-fetched either to foresee the use of an integral all-plastic cabinet which will be molded complete with foam insulation," Mrs. Overand declared at the Newspaper Food Editors Conference.

PLASTIC CABINETS POSSIBLE

"Plastics are being used in ever-increasing amounts in refrigerators to produce more attractive units, eliminate costly and cumbersome manufacturing and assembly operations, and to make the useful kitchen appliance easier for the homemaker to maintain."

From 100 to 125 million lbs. of plastics will be consumed in the construction of approximately 4 million electric refrigerators in the United States in 1953, the Admiral home economist pointed out.

Among the advantages are greater resistance to acids, chemicals and chipping, lighter weight, excellent thermal and electrical insulating qualities, low water absorption and non-absorption of food odors.

'UPSIDE-DOWN' LINER DESIGN?

"When the original Dual-Temp refrigerator with separate controls for the freezer and food storage compartments was introduced, it had the freezer chest at the bottom of the cabinet," Mrs. Overand said.

"Since the average homemaker opens the door to the food storage compartment about ten times more frequently than she opens the freezer, it is logical to assume that there will be a trend to 'upside-down' refrigerator-freezers, with more freezer space at the bottom.

HEAT IN THE REFRIGERATOR?

"Our engineers also say that in the refrigerator of the future it may be possible to utilize the heat from the unit's condensor to warm baby's bottle or even water," she said.

"The recent trend to construction of smaller homes may result in smaller refrigerators being produced to match the kitchen decor. Perhaps there will be counter-height units with refrigerated pull-out drawers, instead of one large door."

NEW FEATURES FOR RANGES

The electric range also has stimulated Mrs. Overand's imagination and she foresees the featuring of several accessories on each unit.

"A combination built-in pressure cooker and deep fat fryer is a possibility," she said, "as well as an automatic toaster. It may also be feasible to mold the circuits in the back of the range and eliminate soldered connections in favor of simple plug-in connections."

NEW LOOK IN THE LIVING ROOM

Moving to the living room of the future home, Mrs. Overand declared that a television set in 1975 may be "two-faced"—with a picture on both sides of the cabinet. When placed in a wall opening, such a set would permit the same program to be viewed in two rooms.

"Admiral engineers also forecast that rooftop TV antennas will be a thing of the past in a few years, with the design of circuits so efficient that built-in antennas will afford good reception in practically all primary signal areas," Mrs. Overand continued. "Radio progressed from long outside antennas to built-in loops and it is inevitable that TV will do likewise."

Another change that will be popular with homemakers will be designing sets to look more like a picture in a frame than today's large console. Engineers may be able to design large picture tubes, 27 to 30 in. in diameter, which will be no more than 10 or 12 in. deep. Sets utilizing these tubes could be placed in shallow wall cavities or on breakfronts.

What Makes Up a Good Retail Sales Effort, Good Sales Manager, Outlined by Evan Moon

OMAHA, Neb. — "Small retailers as well as larger operators can stand up against their competitors if they will concentrate on a few brands, products, and services," stated Evan Moon, of Joske's, San Antonio, Texas, in a talk Oct. 4 before appliance retailers from Nebraska and Iowa, sponsored jointly by the Nebraska-Iowa Electrical Council and the National Appliance & Radio-TV Dealers Association in Omaha.

"Most of us operate on only 20% to 30% of our full selling potential," Moon stated. "What we need is to draw deep down into our own capacities, put that extra effort into each selling contact, just the same as nature shoots adrenalin through our physical systems and provides us with unusual strengths and abilities in times of emergency or catastrophe."

"Being a good manager means that you're a good checker, checking the important details in the right way, both on your salesmen and on yourself," Moon stated. "Morning sales meetings are essential.

"Keep a chart on sales campaigns, showing both products and plans for pushing sales of those products. Good management plans ways to make it easy for the customer to buy, and easy for the salesmen to sell.

"Know your market, and lead the local parade in promoting acceptance and demand for new products. Canvassing, outside selling, is the No. 1 method of contacting America's No. 1 buyer in her office, which is her home."

Moon concluded, "Concentrated selling, inspired leadership, steady goading will result in greater sales."

10 Steps To a Creative Sale

Moon outlined 10 steps to a Creative Sale, for his dealer listeners.

1. Have a selling **plan** for yourself and your salesmen; a definite objective to shoot for.
2. Know your **sales story** and believe it. Keep telling it, or you'll forget it.
3. Tell your sales story in an **interesting and enthusiastic** way. Enthusiasm is the outward glow that comes from inner conviction, and is not only contagious, but difficult to resist.
4. Talk to **twelve** new prospects every day.
5. See and talk to **three** appliance users.
6. Have **four** planned and qualified re-calls.
7. Tell your sales story completely at least **four** times every day.
8. Make at least **two** night calls.
9. Be equipped with **logical and clear answers** to standards customer objections or questions on the products you're selling.
10. Close at least **one** sale every day.

HOUSEHOLD REFRIGERATION

Philadelphia Sales In August Declined Slightly for Most Major Appliances

Electric Appliance	August 1953	August 1952	Total Jan. to Aug. 31, 1953	Total Jan. to Aug. 31, 1952
Air Conditioners	556	..	24,793	..
Clothes Dryers	686	612	4,897	5,728
Dishwashers	376	340	2,891	3,735
Home Freezers	852	1,192	9,385	8,183
Ranges	1,385	1,785	10,122	9,556
Refrigerators	5,883	6,534	51,146	52,223
Water Heaters	950	654	6,805	5,407

PHILADELPHIA—Sales of water heaters, clothes dryers, and dishwashers by distributors in the Philadelphia area during August increased over the same month in 1952, while refrigerator, range, and freezer sales fell off, the Electric Association of Philadelphia reported recently.

Figures released by the association revealed that water heater sales were 45% above last year, dryers were up 12%, and dishwashers were 10% higher. Refrigerator sales were down 10%, ranges 22%, and freezers 29%.

For the first eight months of the year, freezer sales were 14% better than in the same portion of 1952, water heater sales gained 12%, and ranges 6%. Refrigerator sales were down 3%, clothes dryers 15%, and dishwashers 22%.

Reporting distributors reported the sale of 556 air conditioners during August bringing their total for the eight months to 24,793. There was no comparison with last year.

Unit sales for the various appliances in Bucks, Chester, Delaware, Montgomery, and Philadelphia counties were as follows:

Sheehan Joins Westinghouse As Finance Representative

PITTSBURGH—James C. Sheehan has been appointed central district finance representative of Westinghouse Electric Corp.'s Electric Appliance Div. at Mansfield, Ohio, it was announced by C. F. Gilbert, manager of the firm's Retail Finance Div.

Sheehan joins Westinghouse after six years with Commercial Credit Corp. He formerly served as manager of that company's branch office in Washington, Pa. Prior to that, he managed branch offices in Pittsburgh's East Liberty and Dormont sections.

"When the salesman said...

'ALUMINUM IS RUST-PROOF'

...that sold me!"

Aluminum can help you close many a sale, because customers are already familiar with aluminum's advantages. And when you point out the features of aluminum ice trays, evaporators, and other aluminum parts in the refrigeration products you display . . . it can mean the difference between "I'll think about it" and "I'll take it."

Always point-out these extra features...

FASTER FREEZING plus greater defrosting efficiency.

RUST PROOF parts for more years of trouble-free service.

LIGHT WEIGHT easy-to-clean shelves for unusual convenience.

NON-TOXIC qualities provide greater food protection.

VISIT OUR BOOTH 701
8th All-Industry Refrigeration and Air-Conditioning Exposition
Cleveland, Ohio, Nov. 9-12, 1953

BOHN ALUMINUM AND BRASS CORPORATION
1400 LAFAYETTE BUILDING • DETROIT 26, MICHIGAN
Sales Offices in All Major Cities

They'll Do It Every Time . . . . By Jimmy Hatlo

GOATLEY! I'VE GOT GOOD NEWS FOR YOU··· HAD MY EYE ON YOU FOR A LONG TIME···I'VE TALKED IT OVER WITH THE BOARD, AND WE'VE DECIDED YOU'RE JUST THE MAN TO TAKE CHARGE OF OUR EAST RANCID BRANCH OFFICE·· HAROOMPH··GREAT OPPORTUNITY THERE FOR A GO-GETTER···NO, NO···DON'T THANK ME! YOU'VE EARNED IT··· YES, INDEED···
ANOTHER FIREBALL ON HIS WAY TO BIGDOME'S SIBERIA! EAST RANCID IS THE LAST STOP BEFORE A NIGHTWATCHMAN'S JOB···
GOATLEY'S BEEN DOING TOO GOOD A JOB HERE···AN' BIGDOME DON'T LIKE COMPETITION·· SO HE PACKS OL' GOAT AWAY UNDER FILE-AND-FORGET!
EAST RANCID BRANCH COULDN'T MAKE MONEY IF IT HAD FORT KNOX BEHIND IT AND GAVE AWAY BOOK ENDS!
E-EAST RANCID BRANCH? ME? BUH-BUH-BUT, MR. BIGDOME-IT AIN'T···I MEAN IT ISN'T··IT··· BUT I···
GOAT DIDN'T DANCE WITH OL' LADY BIGDOME AT THE OFFICE WING-DING. CHOP, CHOP··· AND HIS HEAD COMES OFF!
POOR OL' GOAT·· HE'S JUST A LOST CHORD ON THIS OUTFIT'S PIANO FROM NOW ON···
BILGEWATER BEVERAGE CO.
Q.T. GOATLEY
JIMMY HATLO 10-1
WATCHING THE GUY WITH A FUTURE BECOME A USED-TO-WAS!
THANX AND A TIP OF THE HATLO HAT TO "NO NAME, NOWHERE, NOHOW"
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Have You READ *'Peace and Progress'* Yet?

HOUSEHOLD REFRIGERATION

You can use these books for reference, review, or study.

HANDY, PRACTICAL, AUTHENTIC, AND INEXPENSIVE

Four books by K. M. NEWCUM

THEORY

MANUAL NO. 1—The theory and principles of refrigeration explained in simple terms. Characteristics of common refrigerants. Construction and operation of the major component parts of a household refrigerator. 144 pages. 114 illustrations. 6 tables and charts. Price $1.50.

DIAGRAMS

MANUAL NO. 2—Diagrams show how to distinguish the difference between the fundamental types of systems. Detailed instructions regarding the proper methods of installing and servicing each type. A comprehensive guide for all the popular makes. 128 pages. 179 illustrations. Price $1.50.

DETAILED DATA

MANUAL NO. 3—Detailed data on methods of servicing several special refrigerators including Allison, ElectrIce, Holmes, U. S. Hermetic, Majestic Conventional, Majestic Hermetic, Socold, Iroquois, and Welsbach. 144 pages. 59 illustrations. Price $1.50.

SERVICE INFORMATION

MANUAL NO. 4—Service information on 12 makes of household electric refrigerators including Absopure, Apex, Atwater Kent, Coldspot (Sunbeam and Sears), Copeland, Dayton (Niagara), Fairbanks-Morse, Graybar Ilg-Kold, Iceberg, Liberty, Rice, and Servel. 129 illustrations. 128 pages. Price $1.50.

GRUNOW

MANUAL NO. 5—Grunow household refrigerator service methods, for all float valve and Carrene Meter models. The vacuum cycle of operation. Step by step procedure for removing and replacing all parts and for all other service operations. Chapters: (1) Refrigerant and cycle of operation; (2) head pressure checking, leak detection, and purging; (3) Carrene meter and checking charge; (4) removing and replacing unit parts; (5) thermostats and electrical equipment, testing capacitors, transformers, and relays; (6) service problems and remedies; and (7) key specifications of 1933-37 models useful in replacing parts. 68 pages. Price $1.50.

HANDY SIZE—"The Refrigeration Library" manuals are 6 x 8¾ inches in size. All are well printed and have durable paper covers. These books are authentic and easy to understand.

BUSINESS NEWS PUBLISHING CO.

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F. M. COCKRELL, *Founder*

'The Conscience of the Industry'

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Let's Put 'One Foot In the Door' Again

AFTER knocking all previous records to smithereens during 1948, the sales of some appliances have hit a few bumps lately. Retail demand has slacked off perceptibly in the last few weeks for "traffic items," small appliances, and for radios, washers, vacuum cleaners, and ranges.

To most appliance manufacturers this sudden slump hasn't meant a thing yet. They're still driving wheels at the highest speed of all time, chewing up all the sheet steel they can beg, borrow, or steal; and some of them have stepped up production of refrigerators and home freezers to greater heights than their engineers ever thought could be achieved in their present plants.

Nearly all the manufacturers in our industry are still far from catching up with their backlogs of orders for refrigeration units. The sudden check in the flow of orders for lesser-demanded appliances has, however, enabled a few "full-line" suppliers to see their way out into the clear for the first time since V-J Day.

Out in the field, nevertheless, there has been a definite change in conditions. No longer are people walking into showrooms and interrupting planned sales talks to ask for an order blank. The big rush of ready buyers—a rush which made distributors and and dealers believe they were dreaming, and which made order and shipping departments know they were having a nightmare—has faded away; and sales organizations are now forced to turn from order-taking back to old-fashioned selling.

To distributors and retail sales managers this drop in *demand business* causes no worries or scratching of heads. They know precisely what's the matter and exactly what to do. They know that specialty selling methods are indicated once again; they remember that they made astounding sales records when times were much tougher, and they understand how to follow up the "One Foot in the Door" specialty selling formula to achieve renewed high volume.

Toward that end a flock of contests have been launched by on-their-toes specialty dealers in certain "key" markets during the last fortnight. Promotion departments of at least three appliance manufacturers are buttoning up plans for nationwide contests designed to keep dealers and salesmen at fever heat during the ensuing six months. And distributors in great profusion are preparing to stage sales contests of their own. Not only are contests being arranged to stimulate salesmen to greater efforts, but dealers are going back to cooking demonstrations, free shows, souvenirs, drawings, guessing contests, theater tie-ups, and similar tried-and-proven devices to attract store traffic again. They are also increasing their advertising.

Biggest problem, distributors and dealers tell us, is to get salesmen back to work. The "pickings" have been too easy for salesmen in recent years, and many of them have "gone soft." Oldsters forget how hard they worked before making a sale in pre-war times, and recruits are accustomed to taking-candy-from-a-baby days.

Hence some distributors figure it may take a long time—and a lot of training—before they can swing their sales crews back into their regular strides. (Some of them are buying and distributing our books, "One Foot In The Door," and "The Marshal's Baton," to help their salesmen get back on the beam).

After a delightful sojourn in a sort of Happy Hunting Grounds for a time, our industry is going back to first principles. Emphasis on specialty selling made our industry a remarkably successful business; and specialty selling will help our industry continue its march to amazingly high new all-time sales records during the coming years.

'Circus Advance Men' Drum Up Interest In Penn's Fall Educational Show Tour

ADVANCE MAN Ivan Stepnich, dressed as a circus barker, sets up eye-catching counter cards announcing Penn's traveling show on automatic controls.

GOSHEN, Ind.—In a promotional step to create interest in its fall educational show on automatic heating and cooling controls, Penn Controls, Inc. here has placed "circus advance men" in the field a week before the show moves into each city on the tour schedule.

Decked out in a circus barker's regalia, complete with derby, cane, and checkered vest, the Penn advance men call on wholesaler sponsors, dealers, manufacturers, and trade organizations in the heating, refrigeration, and electrical fields to whip up interest in the approaching show.

Long before the show, sponsors have been given special invitations to send to customers and prospects on their mailing list.

If there's public notice of the show on display at the wholesaler or distributor establishments, the Penn "barker" sets up an eye-catching counter card inviting everyone interested to go to the show. The card also lists the dates the show is playing in other nearby cities so that those interested may "catch" the demonstration at a later date if they happen to be busy when it "plays" their city.

Once at the show, the guests see a practical, down-to-earth visual demonstration on automatic control installation and operation. The meetings run two evenings in each city; the heating show the first night, and the refrigeration show the next night.

The current fall schedule of the Penn educational shows includes Montgomery, Ala., Oct. 12-13; Birmingham, Oct. 15-16; Atlanta, Oct. 19-20; Chattanooga, Oct. 22-23; Nashville, Oct. 26-27; Knoxville, Oct. 29-30; Louisville, Nov. 2-3; Dayton, Nov. 5-6; Columbus, Nov. 16-17, and Fort Wayne, Nov. 19-20.

General Hydraulics To Handle Heat-X Sales In North Jersey

BREWSTER, N. Y.—The Heat-X-Changer Co., Inc. here has announced the appointment of General Hydraulics Co. of Newark, N. J., as sales representative in the northern New Jersey territory.

Heat-X industrial heat transfer products which the firm will handle include inner-fin oil coolers for hydraulically operated equipment, diesel engines, etc., and inner-finned water-cooled aftercoolers.

Partners in General Hydraulics Co. are Eugene V. Barkow and John C. Swatsworth.

Flexonics Shifts Brass Bellows Output to Tenn.

MAYWOOD, Ill.—With completion in October of a 30,000-sq. ft. addition to its Memphis, Tenn., plant, Flexonics Corp. will transfer brass bellows production to Memphis from the pilot plant at Elgin, Ill., John F. P. Farrar, president, has announced.

Output of brass bellows, used in valve seals and various types of thermostatic and pressure controls, will be stepped up six times, Farrar said. Flexonics Corp., formerly known as Chicago Metal Hose Corp., also makes flexible metal hose, expansion joints, and aircraft components.

The new plant addition at Memphis is a one-story brick structure being built for Flexonics at a cost of about $300,000 and will be rented on a long-term lease. Cost of equipment going into the building will exceed $500,000.

Norman Dawson, who has been quality control manager at Elgin, becomes superintendent of the Brass Bellows Div. at Memphis. Frank Brence continues as Memphis factory manager. About 125 new employes will be added to the Memphis work force.

Specifications Sheet Issued on Eclipse Valves

ROCKFORD, Ill.—A specifications sheet on "Eclipse" 'DO' solenoid valves was issued recently by the Eclipse Fuel Engineering Co. here.

The catalog contains a complete description of the valves, along with specifications and prices.

'Schoolhouse' To Bring B & G Users Up to Date On Engineering Procedure

MORTON GROVE, Ill.—A "schoolhouse" intended to bring about improved engineering and installation procedures in the use of its air conditioning and heating equipment was recently dedicated by Bell & Gossett Co. here.

The newly-constructed building in conventional red with white trim, will be used for meetings of architects, plumbing and heating contractors and journeymen, builders, and engineers, who will be told the best way to install booster pumps, heat exchangers, and other parts of various types of heating and air conditioning systems.

In addition to the latest developments in these systems, the building's equipment includes a fluorescent lighting system that may be dimmed.

This is said to be the first such system outside experimental laboratories.

The schoolhouse represents an extension of the educational and research program begun 25 years ago and carried to nearly all engineering colleges in the country, according to R. E. Moore, vice president. The "classroom" adjoins the company's heating and air conditioning equipment plant, the manufacturer points out.

Declaring that the future of the air conditioning and heating industry is tied to the atomic age, Moore predicted that whole residential communities would be cooled in summer and heated in winter from a central plant in the neighborhood run by atomic power.

He also visualized hot water for washing machines and heat for the kitchen range coming from the same source through a system of pumps and heat exchangers.

Mueller Brass Shifts Domke to West Coast

PORT HURON, Mich. — Paul O. Domke, well known for many years in the refrigeration industry, has been transferred from Mueller Brass Co.'s main office here to the company's Los Angeles office, 3213 East 44th St.

Paul O. Domke

For the past 16 years Domke has been conducting educational and promotional meetings for refrigeration wholesalers and servicemen throughout the United States and Canada. From his new headquarters at Los Angeles, he will be able to give more thorough coverage to the West Coast area, from Canada to Mexico and east to the Rockies, the company said.

Domke is a member of the American Society of Refrigerating Engineers and is a former chairman of the National Safety Committee of the Air-Conditioning & Refrigeration Institute.

BETZ
MODEL DB

FOR BEVERAGE BOXES

QUALITY AT LOW COST

CAN BE INSTALLED ON WALL OR END

MODEL NO.	BTU'S @ 1° T.D.	C.F.M.	COIL SURFACE	LIST PRICE
A-130-DB	130	195	44.0 Sq. Ft.	$ 86.00
A-190-DB	190	295	57.6 Sq. Ft.	101.00
A-260-DB	260	400	73.4 Sq. Ft.	113.00

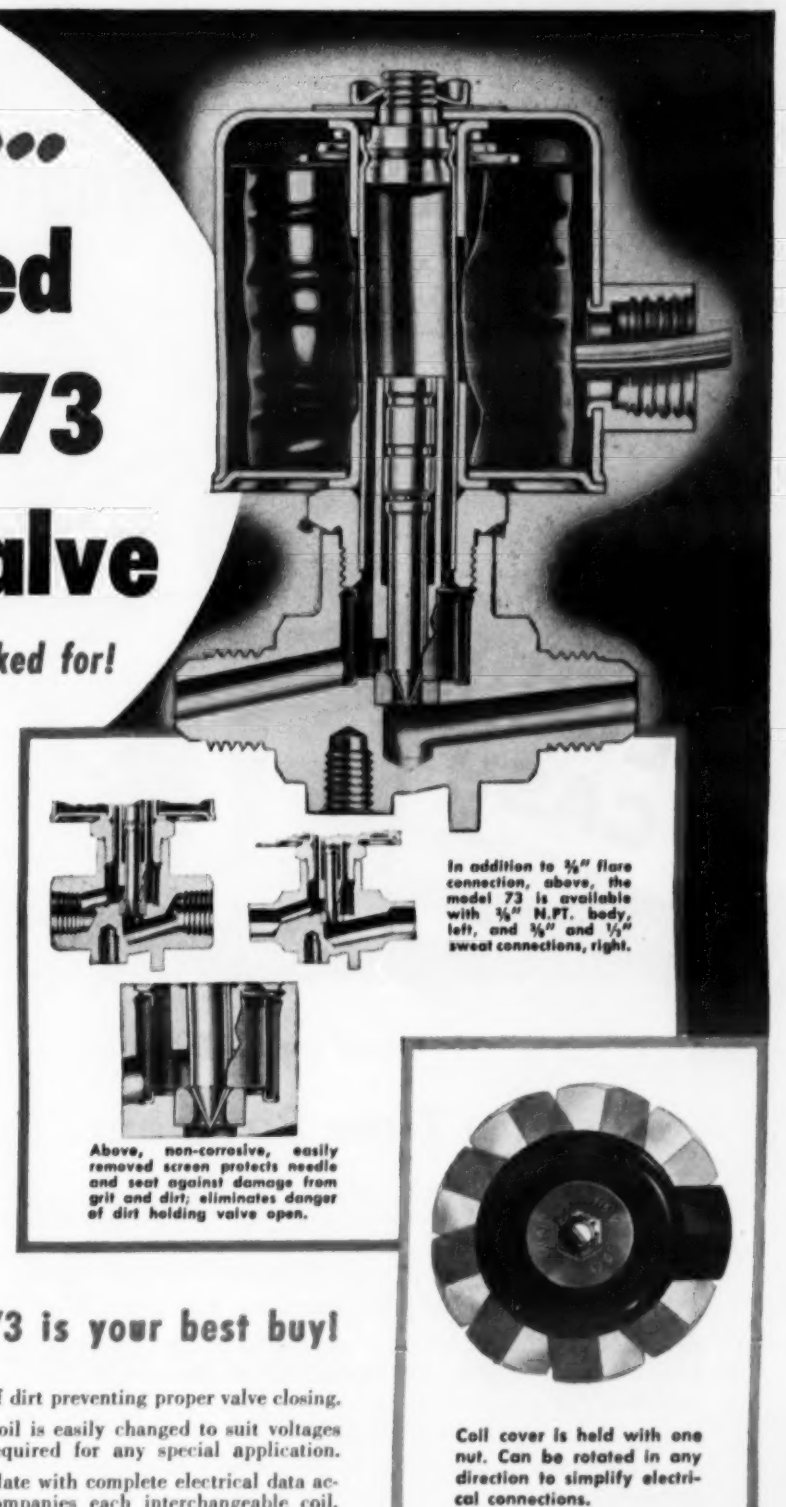
SEE THEM AT YOUR WHOLESALERS

BETZ CORPORATION
HAMMOND ★ INDIANA

Here it is...

An improved A-P Model 73 Solenoid Valve

with all the features you've asked for!



So versatile . . . you can use this solenoid valve for any refrigeration job

Wherever you need a solenoid valve . . . regardless of the type of connection required . . . you'll find that the Model 73 suits your needs exactly. This improved valve is made in four body styles: 3/8" N.PT., 3/8" flare and 3/8" and 1/2" sweat. The coil cover can be rotated a full 360° to accommodate electrical connections from any direction. Can be used for any non-corrosive liquid, and for air and refrigerants. Get all the facts about the dependable A-P Model 73 Solenoid Valve. Write today.

In addition to 3/8" flare connection, above, the model 73 is available with 1/8" N.PT. body, left, and 1/8" and 1/4" sweat connections, right.

Above, non-corrosive, easily removed screen protects needle and seat against damage from grit and dirt; eliminates danger of dirt holding valve open.

Coil cover is held with one nut. Can be rotated in any direction to simplify electrical connections.

6 reasons why the Model 73 is your best buy!

1 Double-dipped, varnish-impregnated coil assures efficient performance under extreme humidity conditions.

2 Valve is equipped with long-life, quiet, floating plunger.

3 Removable, non-corrosive screen protects needle and seat; eliminates danger of dirt preventing proper valve closing.

4 Coil is easily changed to suit voltages required for any special application.

5 Plate with complete electrical data accompanies each interchangeable coil.

6 Available with three orifice sizes — 5/32", 3/16", 7/32".

A-P CONTROLS CORPORATION

2460 North 32nd Street, Milwaukee 45, Wisconsin
In Canada: A-P Controls Corp., Ltd., Cookeville, Ont.
For Export: 13 E. 40th Street, New York 16, New York, U.S.A.

Harry Fogel Is Named Executive V.P. of Jordon Refrigerator

PHILADELPHIA — Harry Fogel, vice president in charge of sales for Jordon Refrigerator Co., has been named executive vice president of the company.

Harry Fogel

Creation of the new top executive position was made necessary by the rapid expansion of Jordon and acceleration of its plans to enlarge its lines and its production, Fogel said. This will be climaxed with completion of their new over $1,000,000 plant in northeast Philadelphia next year.

As executive vice president, Harry Fogel will be in charge of sales, promotions, and administration of the firm which grew from a $300,000 volume in 1946 to over $10,000,000 in 1952. He is also a partner in the company and a founder and has been in the commercial and domestic refrigeration and upright home freezer industry all of his life.

MISSING SOMETHING?

More and better useful information is yours for the asking. See "What's New" page.

Garlic Bread 'Cool' Item

Baker Finds Growing Number of Freezer Owners Builds Market for Frozen Lines

KLAMATH FALLS, Ore.—Installing sub-zero refrigeration equipment of his own has made it possible for John Peterson of Johnny's Bakery here to build up an extra volume of profitable sales to home freezer owners by offering them special orders at a discount.

Peterson got the idea when he checked about a year ago on how many customers owned freezers. He was surprised to find that around one-third did, and immediately saw the possibilities of additional sales.

Since his own sharp freezer was installed, capable of holding up to 1,200 lbs. of frozen baked goods, Johnny's Bakery has offered a "Baked Goods Freezer Special." On any order of $3 or more, Peterson gives the customer an 8% price discount, providing she picks up all the frozen items simultaneously and is a "regular customer."

This unusual offer is carried to the public via radio spot announcements, throw-aways, and direct mail.

As an experiment, when he first began checking into the possibilities of larger unit sales to freezer owners, Peterson developed an extra fine loaf of garlic bread, with the garlic baked right into its creamy texture.

With his opening advertisements built around this specialty loaf, guaranteed to keep its delicate garlic flavor over a long period of time, he attracted a lot of additional customers.

Sales started with a bang and have continued to rise ever since. Now, the baker has developed a basic list of items which must be included in each freezer special order in addition to such items as cream puffs and ice cream pies.

The "basic list" includes a well-rounded choice which the average family customer will require, such as bread, rolls, cake, pie, and biscuits. All are produced in Johnny's Bakery.

"Perhaps the best feature is the swift depreciation of the cost of the refrigeration equipment," Peterson said. "Because we insist that customers stick to the basic list in making up each order, they run out of baked items at approximately the same time, which makes it possible for us to count on a heavy weekly turnover. Also, the smallest unit sales is $3 and often it is $8."

Food Store's 'Bargain Annex' Is Aimed at Freezer Owners

SALT LAKE CITY—"Frozen Vegetables . . . Stock Your Freezer! Pkg., 15 cents. 12 for $1.73."

So urged one of the overhead banners displayed in Grand Central Market's recently-opened "Bargain Annex." Formerly the market's warehouse, the annex features low-end, odd-lot, and off-brand groceries, day-old produce, and commercial meat displayed in cases and bins.

Commercial Refrigeration

FROZEN IN THE STORE'S OWN LOW-TEMPERATURE CABINETS, "Perma-Ice" is a non-melting, re-usable ice which can be used in "weekend" special display gondolas such as this one in Metrick's supermarket in Los Angeles.

Re-Usable Ice Can Be Frozen In the Store

LOS ANGELES — Aisle displays refrigerated with "Perma-Ice," the new non-melting, re-usable ice, are said to be more than doubling sales of dairy products in southern California supermarkets.

This new merchandising plan is being used by Arden Dairy Farms, southern California's largest processors of milk and milk products. The "out-in-the-aisles" plan is claimed to enable perishables to compete with all other types of food items for the impulse-buying attention of consumers.

Under the banner of "Arden Dairy Festival," Arden Dairy Farms has introduced the program in more than 60 stores since last June and plans to continue it as a permanent promotion.

Using collapsible fibreboard gondolas supplied by Theodore Ross Associates, Venice, Calif., processors of Perma-Ice, Arden sets up aisle displays of cottage cheese, buttermilk, whipping cream, chocolate milk, and other dairy products.

Around these products, it places Perma-Ice units which have been frozen overnight in the store's freezer cabinets. These units reportedly retain their cold four to six times longer than ice of comparable bulk and keep the products chilled for from six to eight hours at temperatures ranging from 30 to 50° F.

"Average increases in sales of items displayed have been 100%," it was stated, "and increases of 300 and 400% have been shown in stores where demonstrators have attended the displays."

Carl D. Flinn, Arden's southern division sales manager, said the promotion also booms sales of associated items—such as peaches displayed with cottage cheese and strawberries displayed with whipping cream.

Refrigeration To Aid In Natural Gas Processing

WINNIE, Tex.—A 1,500-ton refrigeration unit will be built at the Texas Gas Corp.'s plants here. Its purpose is to cool the natural gas to get more liquids from the gas, said Russell M. Riggins, president of the corporation.

The Gasoline Plant Corp. of Houston has already started work on the $800,000 installation.

Practically all the liquid hydrocarbons will be removed, when the refrigeration unit is in operation, and the 175,000,000 cu. ft. of gas processed daily in the two plants will be clean and dry.

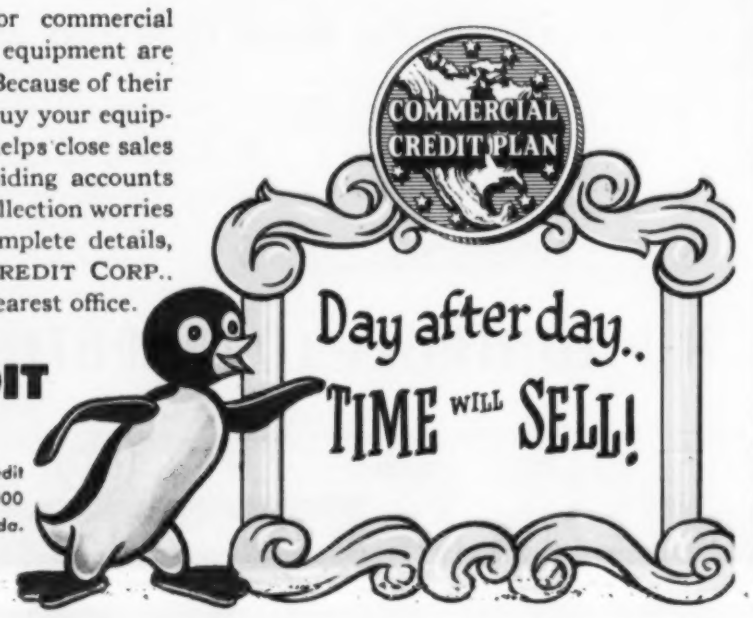
The water in the area is so warm, Riggins explained, that it cannot cool the gas sufficiently to extract all the liquids such as propane, butane and natural gasoline.

IF YOU WERE Your Prospect

which deal would YOU buy?

Feature Time Payments to close more sales with the *COMMERCIAL CREDIT PLAN*

MORE AND MORE prospects for commercial refrigerating and air conditioning equipment are becoming, of necessity, TIME BUYERS. Because of their cash position it's the only way many can buy your equipment. The COMMERCIAL CREDIT PLAN helps close sales . . . improves your cash position by avoiding accounts receivable. And you turn your credit and collection worries over to COMMERCIAL CREDIT. For complete details, facts and figures, write COMMERCIAL CREDIT CORP., 14 Light Street, Baltimore 2, Md. or our nearest office.



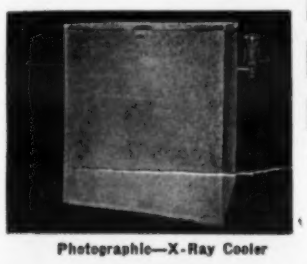
COMMERCIAL CREDIT CORPORATION

A service offered through subsidiaries of Commercial Credit Company, Baltimore . . . Capital and Surplus over $135,000,000 . . . offices in principal cities of the United States and Canada.

For Recognized Quality - Extra Gallons

Sell Your Condensing Unit - Filtrine Water Coolers

Mess Hall—Cafeteria Cooler



Photographic—X-Ray Cooler

Typical "Packaged" Circulating Chilled Water System

Promote your own condensing unit sales with Filtrine's 20-year-life construction . . . high capacity . . . Super Storage . . . more than 40 years' dependability.

COOLERS FOR MESS HALLS — CAFETERIAS

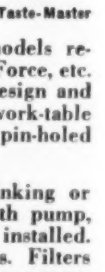
Conform with Fed Spec. 00-C-566b

COOLERS FOR X-RAY & PHOTOGRAPHY

PACKAGED CIRCULATING CHILLED WATER SYSTEMS

REMOTE COOLERS FOR ALL USES

Sell your condensing unit with Filtrine Stainless Steel or Duco finished cabinets, equipped to suit with top/side shelves, bubblers, glass-fillers. Can be Taste-Master equipped to remove chlorine, rust, sediment from water.



Taste-Master

Sell your condensing unit with Filtrine models repeatedly named by V.A., Signal Corps, Air Force, etc. for X-ray and photo-labs. Under counter design and floor-mounted models with stainless steel work-table top. Filters (extra) to prevent scratched and pin-holed negatives.

Sell your condensing unit! Systems for drinking or processing water—completely packaged with pump, controls, your condensing unit factory installed. Capacities 5-400 g.p.h.; storage 5-150 gals. Filters and Rectifier-Dechlorinators (extra) to insure taste-free, sparkling water.

Sell your condensing unit with remote models for new and replacement jobs—all applications. Capacities 10-1000 g.p.h.; storage 7-300 gals. Filters, Rectifier-Dechlorinators available for all sizes.

Remote Model Coolers

Write for catalog and Specification Guide

Filtrine HIGH EFFICIENCY — FILTRINE MANUFACTURING COMPANY · BROOKLYN 5 · N. Y.

"Water Coolers and Filters for 40 Years"

RESTAURANT & BAR EQUIPMENT

DRUM-SHAPED backbar has revolving shelves. Four bartenders can reach liquor stock through four separate doors.

Circular Backbar Reach-In

Makes Serving Easy for Four Bartenders In Compact Hotel Cocktail Lounge

SPRINGFIELD, Mass.—Installation of an unusual circular backbar reach-in refrigerator in the Mayfair Room of the Hotel Bridgway here has resulted in swift customer service, particularly on bottled beer.

Of circular design, the cocktail lounge of the hotel occupies one end of a large room, with tables and dance floor at the other end. With the bar seating 20 and booths and tables approximately 100, volume is high enough to keep a four-man crew of bartenders busy.

To prevent mishaps, interruptions, and bartenders getting in eachother's way, the Bridgeway management called upon Chicopee Refrigeration Co. to design a drum-shaped reach-in box which all four bartenders could use simultaneously if necessary. After much experimentation, a design was developed which has been serving efficiently ever since.

Covered with rich mahogany veneer, steam-formed into a perfect circle, the backbar refrigerator is 4 ft. high and 5 ft. in diameter. Four gasketed doors are spaced evenly around the exterior, and curved to match the arc of the sides. Doors are 36 in. high by 30 in. wide, and swing on heavy chromium hinges.

The interior is lined with stainless steel, and is provided with two decks of slatted oak ribs. The upper deck revolves turntable-fashion to present a fresh stock at any of the doors after bottles stored within have been removed from any point.

Capacity of the refrigerator is in excess of 24 cases of beer, and in addition, the lower deck is used for storage of ice cubes, mixers, various cocktail ingredients, fresh fruits, etc., at 35° temperature. Two fluorescent lamps furnish lighting within.

A ¾-hp. compressor mounted in the basement provides refrigeration, slightly "overpowered" to compensate for the frequent opening and closing of the doors. It isn't unusual for two or even three doors to be open simultaneously, but due to ample insulation, the interior refrigerator temperature does not change sharply.

Busy Restaurateur Uses Salad Display Case To Boost Sales, Relieve Rush Hour

VAN WERT, Ohio—Restaurateur Norm Balyeats has increased salad sales approximately 35% by installing a custom-built display refrigerator in which a dozen types of appetizing salads made up in the morning, are shown to noon-day luncheon customers.

The Balyeats Restaurant, in the center of this western Ohio community of 10,000 persons, is a popular stop for motorists coming off the Pennsylvania Turnpike, enroute from New York to Chicago.

With a well-earned reputation for excellent food, Balyeats has steadily explored one possibility after another toward providing faster-selling, more popular quickly-served specialties.

To that end, an impressive layout of commercial refrigeration had already been installed. Included are two standard Hillman backbar cases, with two levels of display shelving, an ice cube compartment, and low-temperature refrigerated compartments, behind the counter.

These, utilized for perishable desserts, whipped-cream-filled baked goods, pies, etc., worked out well enough to stimulate extra dessert and snack sales. However, the temperature was too low for the display of salads, which Balyeats felt was a field which needed further experimentation.

Working with a local contractor, Balyeats designed a smaller, higher-temperature display unit, which is set up at the head of the service counter, where it is seen by all entering patrons.

Four feet wide by 5 ft. high, the stainless steel unit consists of two 6-cu. ft. storage compartments below waist level and a console-type display area above, in which are located three levels of shelving—made of stainless steel rods. Each shelf is tilted slightly toward the restaurant food service counter in front, so that any item shown can be more readily examined. Two "cold light" slim-line fluorescent tubes provide case interior illumination.

A ¼-hp. refrigeration unit provides an interior temperature within the display area of from 35 to 38°. In the two compartments below, 30° is maintained.

Once salads are made up, they must be displayed at a temperature above 35° and at least 50% relative humidity for maximum flavor, crispness, and all-around eye-appeal, Balyeats has found. Raw ingredients, however, such as lettuce, tomatoes, fruits, various condiments, and dressings, should be refrigerated at 30° for longer storage periods.

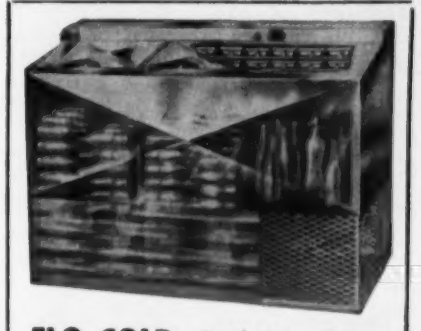
"Lower temperature has a lot of drawbacks," Balyeats said. "First, we have found, salad ingredients which are refrigerated below 35°, almost completely lose their taste, as the cold anesthetizes the tongue.

"Second, temperatures near freezing result in the formation of ice crystals which likewise rob the salad of its taste. When vegetables are too crisp and every ingredient is so cold that its taste is difficult to distinguish from another ingredient, the salad has little chance of success."

Likewise, the restaurant operator emphasized, temperatures of below 35° are likely to result in heavy condensation on the display section of the refrigerated unit, even though "Thermopane" double glass has been utilized. Now, with the 35-38° range utilized, the glass remains clear.

The popular salads featured by Balyeats are made up during the slack morning period between 9:30 and 10:30. Thus, every luncheon customer's orders can be quickly filled.

While the custom refrigerator cost him just in excess of $700, it will soon repay its cost.



FLO-COLD *Stainless Steel*
DRINKMASTER
ICE CUBER-COOLER
Now Also Made in ALUMINUM
See It At The Show.
United Frigurator Engrs.
Menominee, Mich.

"Every day is Show Day for Lehigh BLU-COLD dealers"

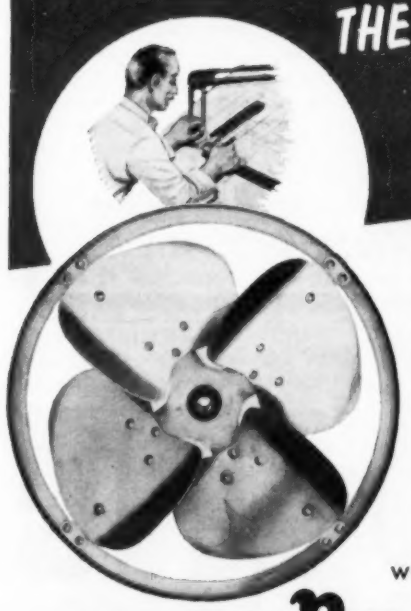
says the Lehigh team

BOOTH NO. 126 - 32

Export Dept. 13 E. 40th St., N. Y.

Lehigh Manufacturing Company, Lancaster, Pa., Division of Lehigh Foundries, Inc.

THE "RIGHT" PROPELLER IS VITAL TO YOUR PRODUCT



The application of the "Right" propeller can make the difference between a successful product and one that does not come up to the high standards of performance required in today's selling. Meier Nu-Air "Quiet" Propellers, in both evaporator and condenser blades with a "slinger" ring can give you maximum air movement with minimum H. P. yet with a *low noise level.*

Many manufacturers, outstanding for their products, specify Meier Nu-Air props. Complete engineering services available to aid you in new design work, modification of existing designs or any application problem.

WRITE TODAY FOR MORE INFORMATION ON

MEIER Nu-air PROPS
TRADE MARK REGISTERED
MANUFACTURERS

Famed for Dependability EST. 1904 *Throughout the World*

MEIER ELECTRIC & MACHINE CO., INC.
3525 EAST WASHINGTON STREET • INDIANAPOLIS 7, INDIANA

$14,000.00 POSITION AVAILABLE

See "OPPORTUNITY" page 2 for details.

Air Conditioning Fan Motors

Economy, Smallness, Quietness, Universality of Operating Positions, Permanent Lubrication Are Top Needs, AIEE Conference Told

FORT WAYNE, Ind. — Because sales of air conditioners are booming, even greater improvements are needed in fan motors, implied M. D. Irwin, product engineer of Carrier Corp.'s Unitary Equipment Div., at a conference of the American Institute of Electrical Engineers here.

Sponsored by the Fort Wayne section and the Committee on Rotating Machinery of AIEE, the conference took up various problems of motor applications in air-moving equipment.

"While it is somewhat early to recapitulate the sales of packaged air conditioning equipment during 1953," Irwin said, "careful analysis indicates that the following sales totals will probably have been attained by the year's end:

Room air conditioners	950,000
Self-contained units (for commercial use)	70,000
Residential units	50,000
Total	1,070,000

"When it is considered that these units include an average of almost 2½ motors per unit (including the compressor driver) this represents the staggering total of over 2,500,000 motors applied by this industry. This does not include a very appreciable quantity of motors required in the several pieces of auxiliary equipment commonly associated with the basic product.

3,500,000 Motors May Be Required In 1954

"As one applies the predicted rate of growth factor to this motor requirement it is seen that in 1954 a total of about 3,500,000 motors will be required, with steady growth continuing upward.

"When it is considered that the sales of packaged air conditioning equipment represents 50% of the industry total, it is then most timely that we meet to discuss our common problems in providing and applying electric motors to air conditioning equipment.

"It is my intent to view the overall problem of motor application to packaged air conditioning equipment from the standpoint of a product designer, emphasizing those elements which have proven troublesome together with some suggestions as to areas urgently requiring improvements," Irwin explained.

Size Range and Operating Conditions Outlined

"Before discussing the specific elements of motor application, the general size range and operating conditions should be defined.

"In the room air conditioning field, we are applying motors ranging in size from 6 to 14 watt output, through the more usual 20 and 35 milli-hp. sizes up through ⅛ hp.

"In the residential air conditioning field, motors are used ranging in size from ¼ through ¾ hp. While, in the self-contained unit field, this latter range is extended up through 3 hp. and higher, as the size range of package self-contained units is extended.

"While the operating conditions to which these motors are subjected vary broadly depending on unit arrangement and location, it can be stated that in general the motors are in contact with the air being moved. Hence, when on evaporator service they are running in clean, dehumidified air varying in temperature from 40 to 80° F.

"Whereas on condenser service, these are operating in air, with normal atmospheric contamination varying in temperature from 50 to 140° F. In this instance, normal atmospheric contamination includes humidity up to 99%, frequently water spray, salt particles, sand, alkali dust, sulphurous smoke, etc.," he pointed out.

Cost Is Potent Force

"While it does not necessarily follow that the cheapest motor is the best motor in the eyes of the product designer, it is to be noted that with the use, on the average of 2½ motors per unit, motor cost is a potent force. With each year, the air conditioning business is becoming more competitive and hence the cost element is assuming an ever increasing importance.

"Notwithstanding this most potent of reasons, however, a potential motor supplier is judged on the basis of dependability, reliability, over-all product quality, and the availability of motor service on a nationwide basis.

Quietness Is Vital Factor

"Assuming a motor is well designed to meet the operating conditions under which it much operate, as regards resistance to moisture, heat, corrosion, etc., probably the most important single mechanical design element is quietness of operation. While this is an electromechanical aspect and will be discussed further as such, none the less the mechanical design must be such that the feed through of magnetic energy (120 cycle) to other unit components is low. The mounting, in addition to being amply strong to withstand shipping shocks, must be designed with this in mind.

"Since these are almost invariably installed in the air stream being moved, propagation of motor noise energy to the air, to the rotating air mover, or to the enclosure must be guarded against. Likewise, the rotating members must be dynamically balanced for the same reason. Further, the motors must be consistent, one to another, because once they are installed in a unit on the production line no special treatment can be given—a noisy motor is a rejected unit," Irwin said.

Permanent Oiling

"As air conditioning units have become more truly hermetic and have been designed into more limiting enclosures (as required on room air conditioners for simpler installation, more weatherproof mounting, etc.), permanent lubrication is now almost mandatory. By this term is meant a design which provides a permanent, fully retained oil supply adequate for the expected life of the motor. It is not considered that over-wicking without provision for adequate retention meets this requirement.

"On larger motors, ½ hp. and up, this may mean the development of precision ball or roller bearings, grease packed, but the old problem of operating quietness again enters the picture. This is a problem which must be met, however, as more and more units are sold through sources not set up with complete service facilities, and periodic inspection and lubrication by competent personnel is less probable.

Smallness Important Especially In Shaded Pole Motors

"With regard to size, generally speaking, smallness is an important asset, since this usually implies reduced weight also. Particularly in the shaded pole motor range, the pancake style design often proves advantageous particularly in applications where axial space is limited. These lend themselves well to propeller fan uses where the center portion of the blades are not highly active. The frame diameter, however, should not exceed one half of the fan diameter or noise and flow problems will result.

"The smaller diameter and longer motors are more advantageous where there are radial space limitations, hence are better for double inlet centrifugal type fans in the interest of maximum air entry on the motor side.

"Universality of operating positions without design modification is urgently needed as regards performance of the thrust arrangement, lubrication system, etc., because motors may be withdrawn from the same inventory for any of several operating positions on various products. It is to the advantage of all concerned that these be interchangeable," he declared.

"In concluding the mechanical design element discussion, there are certain minor elements of mechanical arrangement which though mutually annoying, nevertheless are important in the interest of versatility and interchangeability. Among these are nameplate location, connection location, lubricators where required, standardized shaft location and dimensions, mounting hole locations, alternate base design arrangements, etc.

"In considering the electrical design elements to be considered in this problem, the product engineer is immediately confronted by the continuing problem of the difference between the recommended systems voltage range adhered to by the utilities and the design voltages used by the motor designers. This means that nominal systems voltages of 208 and 240 are maintained with expected maximums of 220 and 250, respectively, on which are being applied units having motors designed for 208 or 220-volt service ± 10%.

"Further, reports are being received from the field with increasing regularity of operating voltages in the range of 260 volts being frequently encountered. No answer is apparent at this time and the following design practice is being used:

"On units ½ hp. and under: 115-volt, single phase.

"On units ¾ hp.: 115, 208, 230-volt, single phase.

"On units 1 through 1½ hp.; 208, 230-volt, single phase.

"On units 2 through 5 hp.; 230, single phase and 220/208 network, three phase.

"On units 7½ hp. through 15 hp.: 220/208 network, three phase.

"The latter two groups use single phase fan motors ¼ through 1 hp. dual rated at 220/208 network, which must perform adequately over a range of voltage from 195 to 250 volts," Irwin said.

"Over 1 hp. in size, three phase fan motors are used, also dual rated at 220/208 network, which are expected to perform over the same voltage range.

Who Should Bear Expense Of Motor Replacements

"A real problem is reaching a climax here, particularly as it involves the problem of who should bear the expense of motor replacements should a marked reduction in motor life result from the increased voltage.

"Leaving that problem to be answered then, the general problem of electrical requirements of motors for air moving service can be described as follows:

"The electrical design must be adequate as regards slip speed, noise, heating, etc., for the broad operating range to which it must be subjected, currently ± 10% of nominal voltage except as noted.

"The nature of air moving loads is such that only moderate starting torque motors are required and, in fact, these have been found beneficial in promoting reduced disturbance on starting, increased drive life, and more quiet starting and stopping.

"Accordingly, on the larger self-contained units incorporating fan motors from ¼ through 1 hp., belted fan duty motors are used instead of general purpose motors. This practice will be extended through the 2 and 3 hp. sizes as these become available.

"In applying the shaded pole motors in the smaller sizes of units, a somewhat more complex problem is met. In this case, the problem of adequately handling the air load must be combined with the need for inexpensive speed regulation to effect cooling capacity modulation. This calls for close cooperation between the product engineer and the motor engineer, in sizing the motor to the load," he emphasized.

"The optimum selection should be a voltage/speed curve which is essentially flat (within ± 5%) over a range of voltages ± 10% or nominal.

"Between -10% and -20% of rated voltage the 'knee' of the voltage/speed curve should occur permitting a total reduction from full load speed of approximately 20%. The so-called 'knee' of the curve should not be so severe as to cause unstable operation at the low speed, nor should it occur so low in the voltage/speed curve that too much energy has to be handled by the resistors or rheostats.

Bill of Electrical Requirements

"Probably the clearest way to sum up the electrical requirements of these motor designs is to list the bill of requirements by which these are judged.

"In the case of the single phase, belted, fan duty motors, there are as follows:

"1. Motors must be nameplated 220/208 volt network 'Suitable for Operation over a range of 195 to 250 volts.'

"2. Motors must operate at the following conditions:

"a. 90° F. ambient.

"b. 130% full load.

"c. 195 volts min.; 250 volts max.

"Without:

"a. Cutting out with minimum tolerance overload.

"b. Winding temperature exceeding 257° F. by resistance measurement; (or manufacturers' warranted safe allowable max. temperature).

"c. Slipping more than 10% from 1,800 r.p.m.

(Continued on Page 37)

DISTRIBUTORS WANTED

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CENTRAL AIR CONDITIONING SYSTEM

AVAILABLE FOR TODAY'S HOMES

Established Michigan manufacturer offers unusually lucrative opportunity in rapidly expanding quick profit market for financially responsible, experienced, hard-hitting *sales organizations*. Substantial investment in inventory and sales promotion required. Minimum annual profits in six figures.

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Acceptance in the field is rapidly changing to "Demand" for these efficient, more economical Cleanable water-cooled Condensers. Owners and service men prefer the "new unit" efficiency that can always be maintained by a simple cleaning process. Brass headers, machined and brazed.

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Rigid stem or capillary tubing for EYE-LEVEL remote reading. Priced from $22.

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TEMPERATURE INDICATORS & RECORDERS

INSIDE DOPE

by GEORGE F. TAUBENECK

(Concluded from Page 1, Column 1)

5,900,000 household refrigerators were made and sold. This year the figure is likely to be 3,900,000. In the meantime Hotpoint's new plant, plus capacity added by other firms, has raised the industry's manufacturing Potential to possibly 7,500,000 household units a year.

Hotpoint's own astute Market Planning Manager, Gene McEwan, estimates that household refrigerator sales won't climb much over 4,000,000 units annually for the next four or five years ("Barring," as he puts it, "an invention or device which would hasten obsolescence—an unknown which market research can't factor.")

If that's the case, it sure looks like OVERCAPACITY.

Will the dealers be loaded, forced, and pressured?

Isn't somebody going to be hurt?

Know Where They're Going

You might think that John McDaniel, vice president in charge of marketing; Howard Scaife, sales manager; Cliff Gramer, merchandise manager; Floyd Slasor, refrigerator sales manager; and Gordon Hurt, advertising manager, would be losing a lot of sleep. It will be their responsibility to *move* all this stuff the new plant can spew so easily.

On the contrary, they appear to be elated. "Dope" has known John and Howard, for instance, more than 20 years. Never have we seen them appear to be healthier or happier. Here's why:

At long last they can work with *their own* production facilities. Hence they are in a position to design something *distinctive,* instead of having a "me too" product to sell.

In the bitter battles for dealers and markets ahead, they feel that a distinctive refrigerator will:

(1) Hasten obsolescence. In nickel words, that means making a prospect want to buy a new refrigerator before the old one wears out. Like automobiles.

(2) Keep their best dealers loyal to Hotpoint, and snare other really good dealers from competitors. Previously Hotpoint has depended on its range to do this job. But the refrigerator is the bellwether, bell cow, and bell-ringer of this business. Now they're ready to Hosannah *their* refrigerator.

Fewer Dealers, Fewer Lines

Messrs. McDaniel, Scaife, and McEwan aren't infants in this business. Been around long enough to sense trends, and to evaluate them expertly. The individual dealer's future, as they assay it, is affected sharply by the trend toward "full line" manufacturing.

During the now-disappearing Seller's Market his problem was to get goods. So he bought anything he could obtain from anybody who had it at any given moment. Presently the fellow from whom he sneaked a few extra automatic washers or TV sets is pressuring him to take on another "full line." Poor Mr. Dealer can't finance more than one or two "full lines"—plus half a dozen assorted extra single products he has acquired. Something has to give somewhere.

What gives?

In thousands of cases postwar dealers are giving up the ghost. There's no money in a business which seems based upon giveaway discount contests. (Gag: *Definition of a legitimate dealer*—one who doesn't offer a discount until the prospect starts to leave, instead of when he walks in.)

Sad to note, many older, long established dealers are quitting, too. They spend so much time with so many manufacturers' and distributors' representatives that they have little time left to sell. Nor do they like the "five-dollar-profit" aspect of today's too-many-outlets situation.

All is Confusion. It needn't be, though. If a manufacturer can provide a really good stable of basic "big ticket" products—with distinctive features—a substantial merchant can settle down and focus his efforts on a single brand.

Fewer dealers, with fewer lines: that's the answer.

Among manufacturers and distributors it will be dog-eat-dog to secure this sort of loyalty from the remaining *good* dealers, Surviving dealers will benefit in the long run. So will the surviving manufacturers.

Sharp Is Sharp

Sharply cerebral (and aptly named) John Sharp is Hotpoint's President. He takes a longer and more philosophical view. From his elevated position, and background of experience, next year is but an inch on the mile of industry's time-cycle.

He isn't worried about the new Hotpoint plant being too big. This is what concerns him: Can it take care of the demand five or six years from now?

"In the long run," he simplifies, "it's more economical to build a plant large enough for the foreseeable future than it is to enlarge capacity piecemeal."

He studies the population statistics, and is preparing for a huge wave of *new home formations* in the 1960's. Along about that time record numbers of young folk sired in the 1940's will be marrying, spawning kids of their own, and buying refrigerators.

Furthermore, he points out, a factory capable of turning out a million refrigerators in a fifty-week year has a practical capacity of about 750,000 units per year. The seasonal nature of our business puts a premium on the *availability* of refrigerators during Spring and Summer. The investment in factory, warehouse, inventory, and overtime must be compromised and balanced at about 25% less than the theoretical full year capacity.

When you look at it from that standpoint, it is obvious he knows what he's doing.

Advice to Dealers

Lest our subscribers think we've gone overboard for Hotpoint thinking, we hasten to add that our good friends at Frigidaire, Kelvinator, Servel, General Electric, Norge, Westinghouse, Universal, etc., concur in general with this line of reasoning. Let's restate it:

(1) The refrigerator business probably will level for the next four or five years, then zoom upward again.

(2) The manufacturer who can provide something new—in product, merchandising, advertising—will get a more profitable share of the market.

(3) Dealer mortality rates are growing higher. Those who stick it out will handle fewer lines—and make more money.

(4) Emphasis will shift from *numbers* (of dealers, franchises, and products) to *effectiveness.*

(5) In the long run surviving manufacturers, distributors, dealers will enjoy a more profitable business.

9 Newly-Styled Models in '54 Hotpoint Line

CHICAGO—Hotpoint's 1954 line of household electric refrigerators will consist of nine models, designed with a new approach to styling, and constructed to take advantage of the high standards of quality made possible by the new Hotpoint refrigerator plant, states Floyd M. Slasor, veteran Hotpoint sales executive.

F. M. Slasor

"The fact that Hotpoint made a tremendous investment in a new refrigerator factory is an assurance for dealers that refrigerators will play an important part in the company's plans for merchandising the all-electric kitchen," Slasor said.

Slasor pointed out that rather than to try to introduce radical styling at this time, Hotpoint had designed its 1954 refrigerator models with clean, traditional lines, both inside and outside, to provide a functional, pleasing appearance in modern kitchens.

"We believe that the appearance of the 1954 refrigerator will be just as modern 20 years from today as it is now," declared Slasor, who has had 27 years experience in the business.

"The modern refrigerator must keep pace with family food habits and changes that have taken place in the food industry," Slasor continued. "In the post-war years, the food industry has undergone a revolution. More and more frozen foods are becoming a part of the American family's diet. A result is that correct storage zones for frozen foods, as well as bottled goods, beverages, meats, fish, and many other food items has dictated changes in refrigerator design.

"We have seen the refrigerator evolve from a cold storage box for food to a scientifically arranged 'super store' that places a week's supply of fresh and frozen foods and beverages at the housewife's finger tips. Proper storage zones and temperatures for each item have multiplied capacities and drastically cut spoilage. The modern refrigerator probably gives more convenience and health-protecting value per dollar invested than any other piece of household equipment.

"The new Hotpoint line, for example, provides a sufficient variety of temperatures, so that all types of foods can be stored at recommended temperatures. The advantage of this type of styling is less waste, prolonged storage periods, and greater convenience for the user."

Slasor pointed out that the need for a variety of temperatures resulted in dual cooling systems that provide a high humidity food storage area and a separate true food freezer. In the 1954 Hotpoint line, five of the nine models will provide the double cooling system.

Although surveys indicate that most women prefer white interiors, there is evidence that interior colors are gaining some favor, said Hotpoint's refrigerator sales manager, noting that certain 1954 Hotpoint models have a light pastel green interior, because it is pleasing to the eye and also because it blends in with most kitchen decorative schemes.

In the interior design of the new models, considerable attention was given to providing more storage space and easier cleaning. Highlights of this design are all-rounded corners, porcelain liners, rounded shelf supports, and larger door shelves, which provide storage for milk bottles and other large beverage containers. Aluminum is used in the shelf and evaporator construction.

New Hotpoint Refrigerator Plant Producing '54 Line

(Continued from page 1)

are received either by truck or rail and stored in one area on the extreme west side.

This storage area is 40 ft. wide and 400 ft. long. And overhead crane is used to disperse raw materials into their proper departments. The flow of materials into production lines is all in the same direction—from west to east.

The main assembly conveyor line in the refrigerator unit plant is 7,000 ft. long and carries all component parts. This line goes directly into the component part departments, in contrast with the usual procedure of having the component parts brought to the line. One of the advantages of this innovation in plant layout is that the trucking and handling of parts in the assembly department is minimized.

This type of plant layout has another desirable feature. Production supervisors and production control personnel operating in a certain department do not have to contact any other department in meeting main assembly line schedules, but meet main assembly line schedules right in their own departments.

Each department is separate from the other and each is responsible for its component part. Raw material storage and re-handling problems are greatly reduced by allowing additional space in the department for storage of raw materials as they are received.

There are three major divisions of operations in the cooling unit plant:

1. Construction and assembly of the evaporator.
2. Construction and assembly of the condenser, and assembly of the condenser with the compressor on the cooling system assembly mounting frame.
3. Fabrication of the connecting tubing and the heat exchanger.

A new method of fabricating condensers is used at the plant. It eliminates the use of a larger number of wire reels in the fabricating area and permits a close tie-in with the main unit assembly line. Condenser units are produced at the rate of 150 per hour. The new fabricating unit was developed by the National Welding Co.

Two women operators sit above one side of the automatic sliding rack and feed ready cut radiating wire into a magazine. A rectangular form passes underneath the magazine, picking up the wires. A spring loaded lock prevents more than one wire from entering a comb in the form.

When the bottom side of the form is filled, an operator places the formed tubing on top of the wires. The form then passes underneath a second loading operator and the top layer of wire is added. This process takes 3 to 4 seconds.

The complete form is fed directly into a National 740 volt press-type automatic welder, also new to refrigeration industry operations. The welder makes 2,600 separate welds in 13 to 15 seconds. After this welding operation is completed, the condenser is removed to a conveyer and passes for final forming of the tube ends, after which it is tested for leaks,

(Continued on following page)

In the following several pages of this issue is told the story of the industry's newest major manufacturing facility, the new Hotpoint refrigerator plant in Cicero, Ill.

In serving all elements of the industry, the News has naturally presented news about manufacturers and manufacturing facilities, but not since the early pioneering days of the household mechanical refrigerator industry has it gone to any lengths to describe manufacturing facilities and operations in great detail.

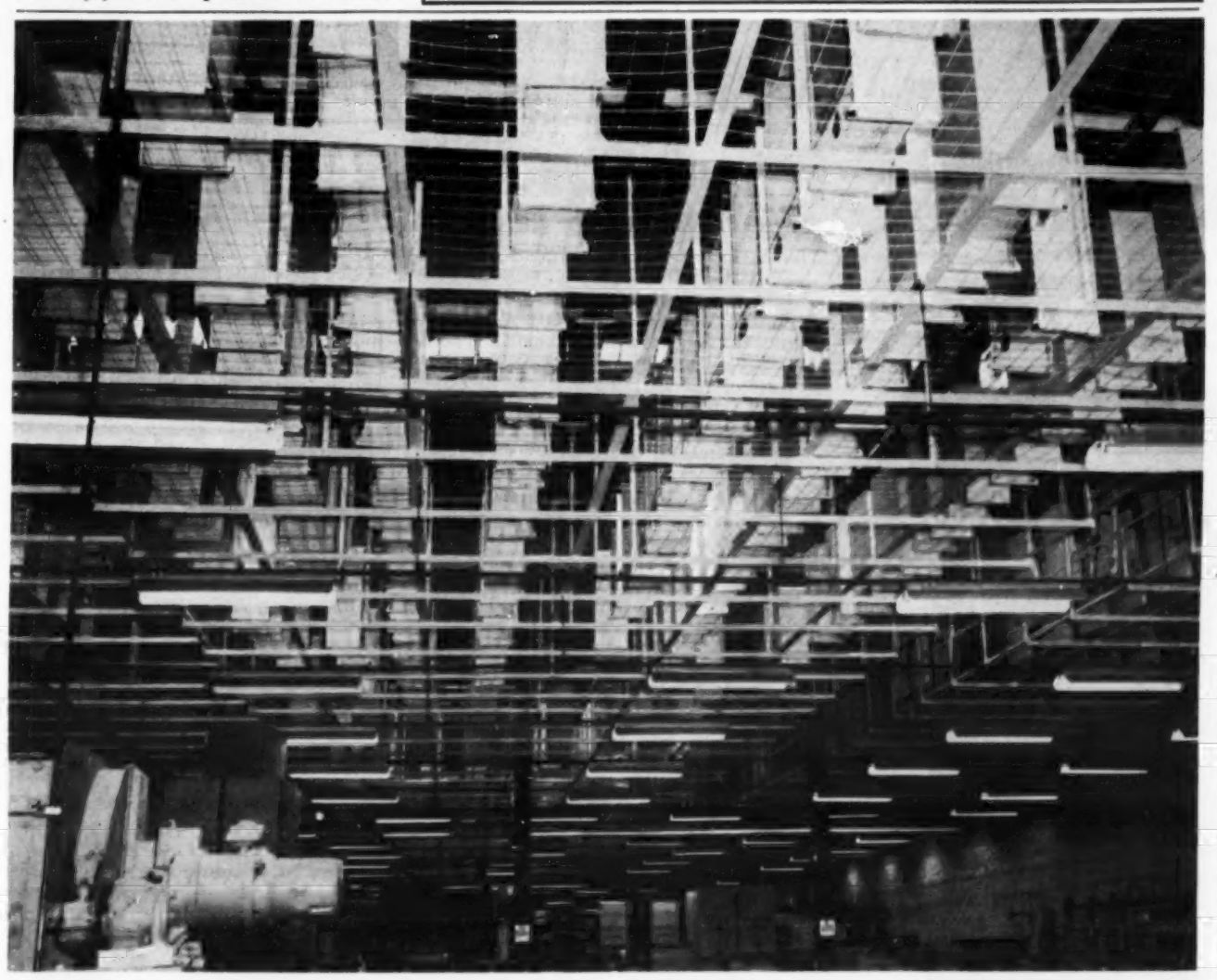
However, when the opportunity was afforded the editorial staff of the News to see the new Hotpoint plant go into operation, the editors welcomed the chance to obtain and tell the story of this new manufacturing operation—for a number of reasons.

It is a *completely new* production facility, filled with new machinery and new processes for producing refrigerators. The plant is being used to produce a distinctively new line of refrigerators. The plant is a projection of some advanced thinking by top Hotpoint management about the *future* of the household refrigerator industry (see Inside Dope).

We believe that a great many readers will find much to interest them in this story of how the new Hotpoint plant, designed and fitted out to produce the "refrigerator of tomorrow" as Hotpoint puts it, has gone into operation to produce the 1954 line of Hotpoint refrigerators.

Cooling Units Move Along

COOLING UNIT CONVEYOR LINE at new Hotpoint refrigerator plant moves steadily along as girl brazing operators make tubing connections on cooling system assembly being produced in the plant.



GRAPHICALLY SHOWN HERE ARE PART OF THE HOTPOINT REFRIGERATOR PLANT'S OVERHEAD CONVEYOR LINES WHICH CARRY components and sub-assemblies to the main assembly lines and provide mass overhead storage of various models of refrigerators. The conveyor line has more than 35 separate systems and represents approximately 9.8 miles in total length.

New Hotpoint Production Facilities Employ Advanced Techniques

(Continued from preceding page)

and then moved to the unit assembly line.

In the production of evaporators for refrigerators in its new plant, Hotpoint is making use of a number of new techniques, and special machines have been devised to make the application of these techniques possible.

First step in the production of the evaporators involves the handling of the aluminum sheets used in producing this part of the refrigeration system. A machine especially designed for the Hotpoint operation combines straightening, shearing, and stacking of aluminum sheets. Rolls of aluminum are fed directly into the straightener and then into a standard shearing press, and are then automatically stacked.

As it is needed, the cutout sheet aluminum is then sent to the evaporator wrap presses. Three 150-ton Struthers-Wells press brakes pierce, emboss, and flange the flat sheets. The partly formed evaporator sheets are then sent to an automatic washing machine which removes every trace of dirt and scale. This cleaning operation is necessary to assure good brazing results.

In the next step, aluminum evaporator tubing is set on the back of the evaporator sheet with brazing strips placed between the tubing and the sheet.

The materials thus assembled then go into a brazing furnace which bonds the tubing to the formed sheet. In this operation close control of brazing temperatures is vitally important, and a special brazing furnace control setup holds the temperatures evenly throughout the entire production run. Recording charts enable production supervisory personnel to note immediately any deviations from the specified temperatures at which the furnace should be operating.

From the brazing operation, the partially formed evaporator moves to an acid pickle and water rinse, is air dried and inspected.

Final forming of the evaporator and assembly of the evaporator back into its proper shape as it is done in the Hotpoint plant is said to be a completely new production operation. Working closely with Hotpoint production executives and engineers, the Struthers-Wells Co. made new dies and developed a set of especially designed machines to carry through with the new concepts in producing evaporators.

The principal machine which Struthers-Wells developed for this step in production is one which accomplishes in a single operation what was formerly done in a series of three or four operations.

The machine especially designed by Struthers-Wells has been made to incorporate a resistance welder. The welder is laid horizontally across the tangent bender. The evaporator back is placed in the machine with the tube and sheet assembly.

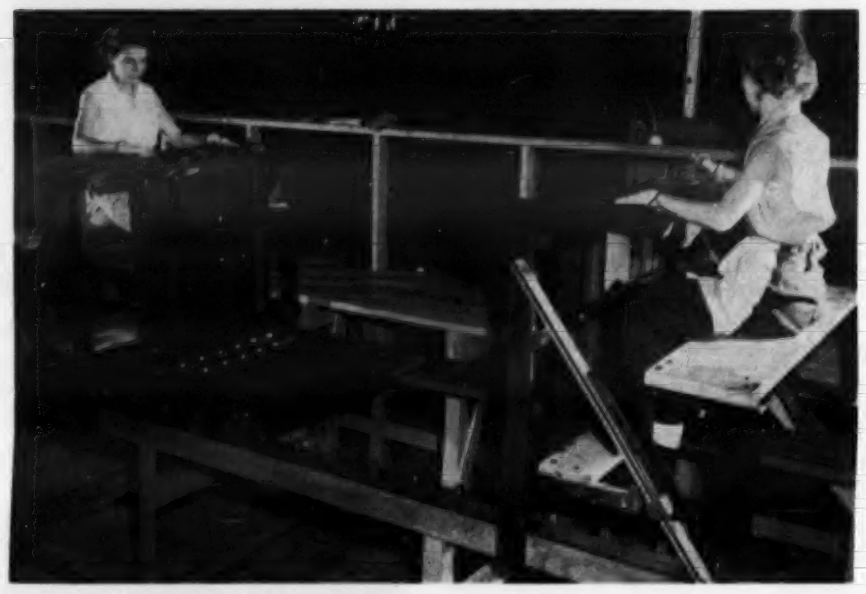
Two heads move upward bringing the evaporator sides around and curling them across the ends. The welding points move down and weld the ends together. The result is an evaporator with a back assembled. Total time to do all of this is 9 seconds.

Final sizing of the evaporator is done on another machine especially designed for the job. An expanding arbor stretches out the evaporator shell and removes wrinkles in the sheet, and sets the evaporator shell to a uniform size. Then the same machine performs a revolving operation and puts a tight roll bead on the seam that connects the back of the evaporator to the rest of the shell.

In the next step, welding of the

(Continued on next page)

Fabrication of Condensers Is New Development



CONDENSER ASSEMBLIES ARE PRODUCED at the rate of 150 per hour with new production equipment developed by the National Welder Co. In the first step, shown here, women operators sit above one side of an automatic sliding rack and feed ready cut radiating wire into a magazine. A rectangular form passes underneath the magazine, picking up the wires. When the bottom side of the form is filled, an operator places the formed tubing on top of the wires. The form then passes underneath a second loading operator (at left in this picture) and the top layer of wire is added.

PART OF CONDENSER ASSEMBLY FORMING OPERATION is shown here, radiating wire for one form in place, the magazine loaded and ready for the next form, while operator pushes wire up ready to re-load. A spring-loaded lock prevents more than one wire from entering a comb in the form.

WELDING AT THE RATE OF 2,600 separate welds in 13 to 15 seconds is accomplished in putting the condenser assembly together, in a National 740-volt press-type automatic welder.

PREPARING EVAPORATOR FOR TUBING CONNECTIONS is no job to be done in careless manual fashion, and a Vaill upsetter is used to prepare it for tubing connections.

Flow Test Check Reveals Any Obstruction In the System

FLOW TEST OPERATION FORCES DRY AIR CHARGE through the system, so that improperly functioning capillary or obstructions anywhere in tubing can be quickly detected.

CHECKING RESULTS OF FLOW TEST, operator must determine if flow has been at specified rate. If it was not, chances are that there is some type of restriction in the lines that would carry the refrigerant, and the cooling unit is rejected until necessary alterations can be made.

CAPILLARY TUBE WHICH METERS REFRIGERANT is wound around suction line tubing to make a heat exchanger. Operation is carried out on special winding machine.

Preparing Cooling Unit for 'Test Tank' Dive

COOLING UNIT ASSEMBLY IS CHARGED with high-pressure air in preparation for the water tank leak test.

Simplicity of Design, More Emphasis on Frozen Food Compartment, Little Price Change, In Future Models

CHICAGO—The trend of refrigerators is turning toward the classic design, a design that will not be outmoded in the next 10 or 15 years, believes John F. McDaniel, vice president of marketing for Hotpoint Co.

"The refrigerator of tomorrow that is being manufactured today must incorporate a design that will blend into the homemaker's kitchen today as well as 10 years from now," McDaniel asserts.

Hotpoint's marketing chief believes that dealers are recognizing the need for a simple, classic design of the modern refrigerator, because unlike automobiles, the buyer doesn't trade in a refrigerator every two or three years.

While the simple, classic design may be emphasized, McDaniel said that the refrigerator of tomorrow will have more features.

"Features, while they are important to the consumer, are also important to the industry," he pointed out. "They are a sales help to the manufacturer, the distributor, and to the dealer. New and better features, ones that are needed by the homemaker, must be forthcoming by appliance makers," he added.

"One feature of the refrigerator that will always be attractive to the homemaker is the separate food freezer. More emphasis will be placed in the next few years on the separate compartment food freezer. The capacity of the food freezer will also be increased in the future."

In commenting about color, McDaniel stated that color on the interior is here to stay.

"This year, in recognizing this interior color trend, Hotpoint is offering the homemaker choice of the new 'Capri' color styling or an all-white refrigerator. Surveys by our market research department show that the color preference is very well divided on a 50-50 basis. We have geared our refrigerator production to the public's demands and tastes."

When asked about color for the exterior of the refrigerator, McDaniel said that color on the exterior has been tried and has failed.

"It has failed for several reasons," he said. "One reason is that the public is not ready for it. Another is that you cannot offer the public a basic color, such as a blue, red, or yellow. You have to offer them a variety of shades of one color. This would present a very difficult and complicated manufacturing and production and inventory problem.

The marketing vice president wouldn't speculate as to when he thought vari-colored refrigerators would be manufactured, but he said that in the next 10 years time, the homemaker and newer methods of manufacturing and distribution might answer that question.

When queried about the marketing of refrigerators of today and tomorrow, McDaniel said that the refrigerator is an item with great acceptance. However, because of the highly competitive situation, greater emphasis will have to be placed on features and the best trained salesmen will reap the majority of sales.

The question of training salesmen to sell more white goods from the sales floor prompted the question of an intensified sales training program on the part of Hotpoint. McDaniel said that Hotpoint has always been foremost in helping to train salesmen in the art of selling appliances.

"We have a sales training department which has exercised the greatest influence in training salesmen. We have and will continue to strive for better training methods and techniques at the dealer level."

In discussing one of the most important subjects on the lips of manufacturers, distributors, dealers, and homemakers—prices, McDaniel predicted that no major price reductions will be forthcoming in the immediate future because of materials, labor, and manufacturing costs. He said that refrigerator prices should remain about the same.

Evaporator Given Many Tests on Assembly Line

(Continued from preceding page)

header assembly to the evaporator, another new process is used. Advanced argon welding techniques are used in this process, which was developed by Hotpoint engineers.

The entire welding process is completely automatic, no manual welding operations being used, and it can really be called a "pushbutton operation" in that all that the operator actually does is push a button and watch certain instruments.

With the evaporator construction process thus complete, the tube ends are capped and the evaporator assembly is charged with a dry air, with which is mixed "Freon-12." A pressure is built up with this mixture, and this pressure remains in the evaporator assembly until it is ready for assembly on the complete refrigerator.

With the evaporator under pressure all the way through the remaining tests, washings, and other processes, it is a very simple matter to check for any major leaks at the point of final assembly by testing to see if the pressure is still holding. If it isn't, the evaporator is taken off the evaporator assembly line and sent back for further tests and checks.

Presence of the "Freon-12" in the gaseous mixture makes possible a final leak test with a "snifter" type leak detector.

'Pushbutton' Argon Process

JUST LIKE PUTTING A CAKE INTO AN OVEN is the advanced argon welding technique employed in welding the header assembly to the evaporator. The entire process is completely automatic, no manual welding operations being used. The operator puts the assembly into the welder, pushes a button. That does it.

First step, however, after the evaporators have taken the charge of the high pressure dried air and "Freon-12" mixture, is to give them a high pressure leak test, prior to the anodizing process.

An automatic anodizing machine designed for Hotpoint by the Meaker Co. is used for the complete anodizing process. The design of the anodizing equipment, which is such as to cut the lead-in time into the tank, plus its automatic operation, has cut the usual time spent on this operation. After anodizing, the complete evaporator is checked over with an electric instrument to determine if the anodizing thickness is proper.

Following this, a Type "H" leak detector is used to detect any minute leaks that may occur in the tubing or welding joints. This inspection is done in a pressurized room to make certain that no contaminated air will affect the operation of the leak detector.

The main assembly monoveyer line starts in the evaporator department, where it picks up the evaporator. It moves to the condenser and mounting frame assembly department picking up these assemblies. Next stop is the tube fabricating department where it picks up the heat exchanger and other tubing.

In the tubing department, the production worker, who "fits" the tubing to the assembly, is also responsible for seeing that it is correctly brazed.

(Continued on Next Page)

FINAL CHECKING OF THE EVAPORATOR ASSEMBLY is pictured here. As conveyor belt moves by, girl in foreground examines evaporator for flaws and faulty joints, while girl in background uses "snifter" type leak detector to seek out any leaks (unit is charged with "Freon" on air mixture).

Top Manufacturing Officials Take a Periodic Check of Assemblies on the Production Line

SOME EXPERT INSPECTING OF A FINISHED EVAPORATOR at the evaporator storage area is carried out by (l. to r.) Pat Ryan, general superintendent; Howard Stutzman, refrigeration plant manager; and B. E. Schroeder, vice president in charge of manufacturing.

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Water Tank Test Is One of Many Used To Assure a Perfectly Sealed System

(Continued from Page 15, Column 1)

"Thus, if he should complain that there is anything wrong with the connections, we can say 'get a mirror,'" is the way one Hotpoint production executive puts it.

The refrigeration assembly then proceeds to the silver soldering operation. Before the last joint is silver soldered, dry air is forced through the entire system at a controlled pressure and the air flow measured to determine if the entire unit is functioning properly or if any restrictions exist.

When the last joint is brazed, the cooling unit is charged with high pressure dry air and sent through a washing operation to remove any dirt or materials from the welded joints.

The "water test" is the next stop for the refrigeration system assembly. To test for any leaks that may be present, the unit is submerged in a high pressure leak test tank for a minute and a half. As it passes through the tank, the operators watch for tiny air bubbles, which if present will rise to the top of the tank.

A large chart drawing of the refrigeration system, with points at which leaks might occur numbered in large figures, is mounted beside the leak test tank, so that the test observers may get a "fix" on the part of the system in which the leak is originating. The operators report leaking units to a station about 25 ft. further down the line.

AT WATER TANK LEAK TEST AREA, a large drawing of the cooling unit assembly, with all connections and joints numbered, enables the operator to properly designate any point at which leak shows up.

As the unit emerges from the test tank it goes to an automatic blow-off which dries it.

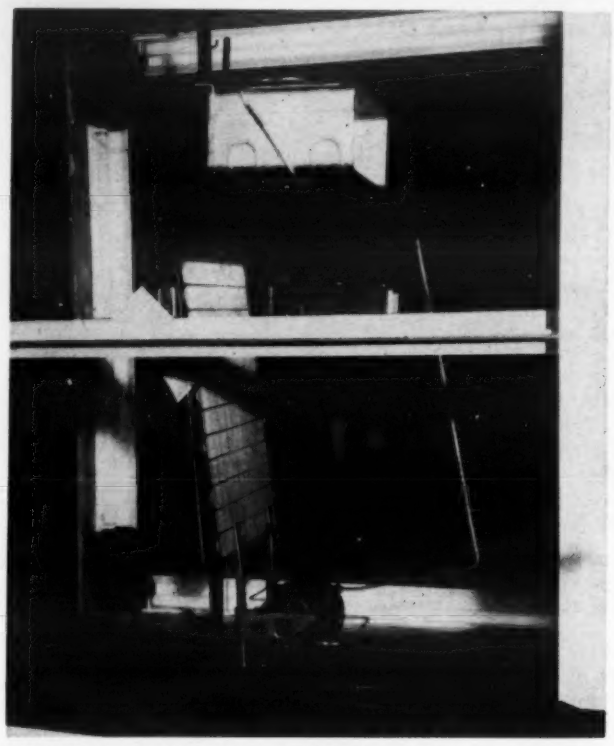
The refrigeration system assembly next moves to what production men consider to be probably the most critical process in the plant, the dehydration of the refrigeration system. With the modern hermetically sealed refrigeration system, it is vitally important that the system be as nearly perfectly dry as possible (100% "dryness" is not attainable, but the closer a system is brought to this point of perfection, the more free of trouble it will be.)

The dehydration system which is being used at the Hotpoint refrigerator plant is said to be the only one of its kind in use. Designed to Hotpoint specifications by Consolidated Vacuum Co. (formerly Distillation Products Co.), the dehydration equipment is designed to reduce moisture content in the system to as close to the point of complete absence as is humanly possible to attain. The cooling assembly units must come out of the dehydrating oven and test at 50 microns.

The cooling unit remains on the conveyor line as it goes through the dehydration process. Vacuum carts are attached to the unit. Four cooling units are attached to each cart as they go through the dehydration oven. Eighty-two of these vacuum carts are used in the dehydration setup.

Vacuum carts travel underneath the oven on a conveyor line. A nearly absolute vacuum is obtained through the use of the new diffusion pump principle. An important part of the dehydration equipment is the vacuum connecting device, designed by Production Control Units Corp. This connector underwent months of

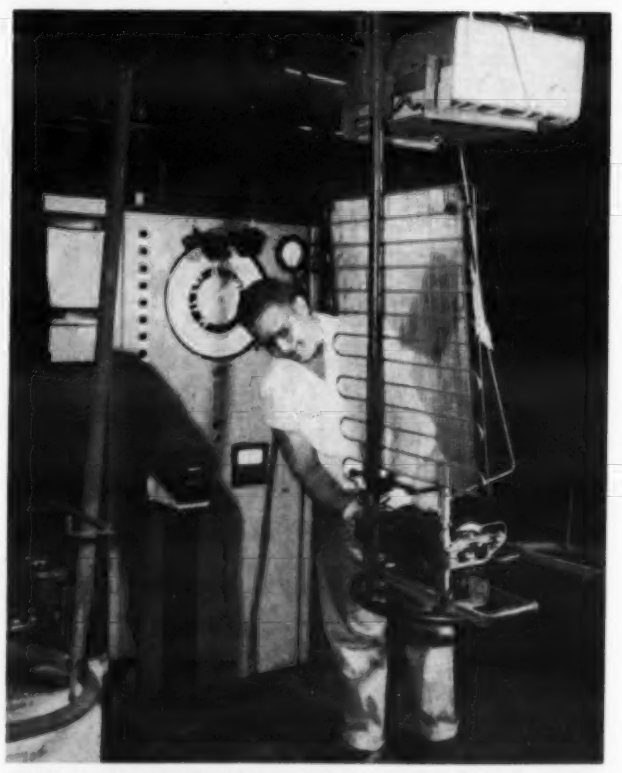
(Continued on Page 18, Column 1)



COMPLETELY SUBMERGED IN WATER, cooling unit assembly moves on conveyor through glass-windowed water tank. Pinpoint leaks will create air bubbles in the water, since system is under high pressure charge of air.

HELIUM TEST IS ONE OF THE MANY TESTS for leaks to which cooling units are subjected. While unit is still under vacuum after passing through the dehydration oven, it moves into a hooded area where there is a low concentration of helium. If there is a leak anyplace in the system, helium will be sucked into the system. Detection of helium in the system is done with a mass spectrometer, as shown here.

SOME OPERATIONS ARE DONE SIMULTANEOUSLY on cooling unit assembly line. Girl at left is grommeting the condenser, while operator at right is gun-welding a by-pass tube which saves compressor from any possible damage during test operations.



"PUSHBUTTON" OPERATION is the charging of the refrigeration system with "Freon" refrigerant and oil. Automatic charging board developed by Acme Aluminum Alloys Co. injects properly apportioned amounts of refrigerant and oil for the various models by the mere push of a button once connections have been made.

Another MEAKER Anodizing System!

Anodizing Machine from sealing tank end

Anodizing Machine Specifications:

Overall Length — 117 feet

Capacity— 135 Evaporators per hour

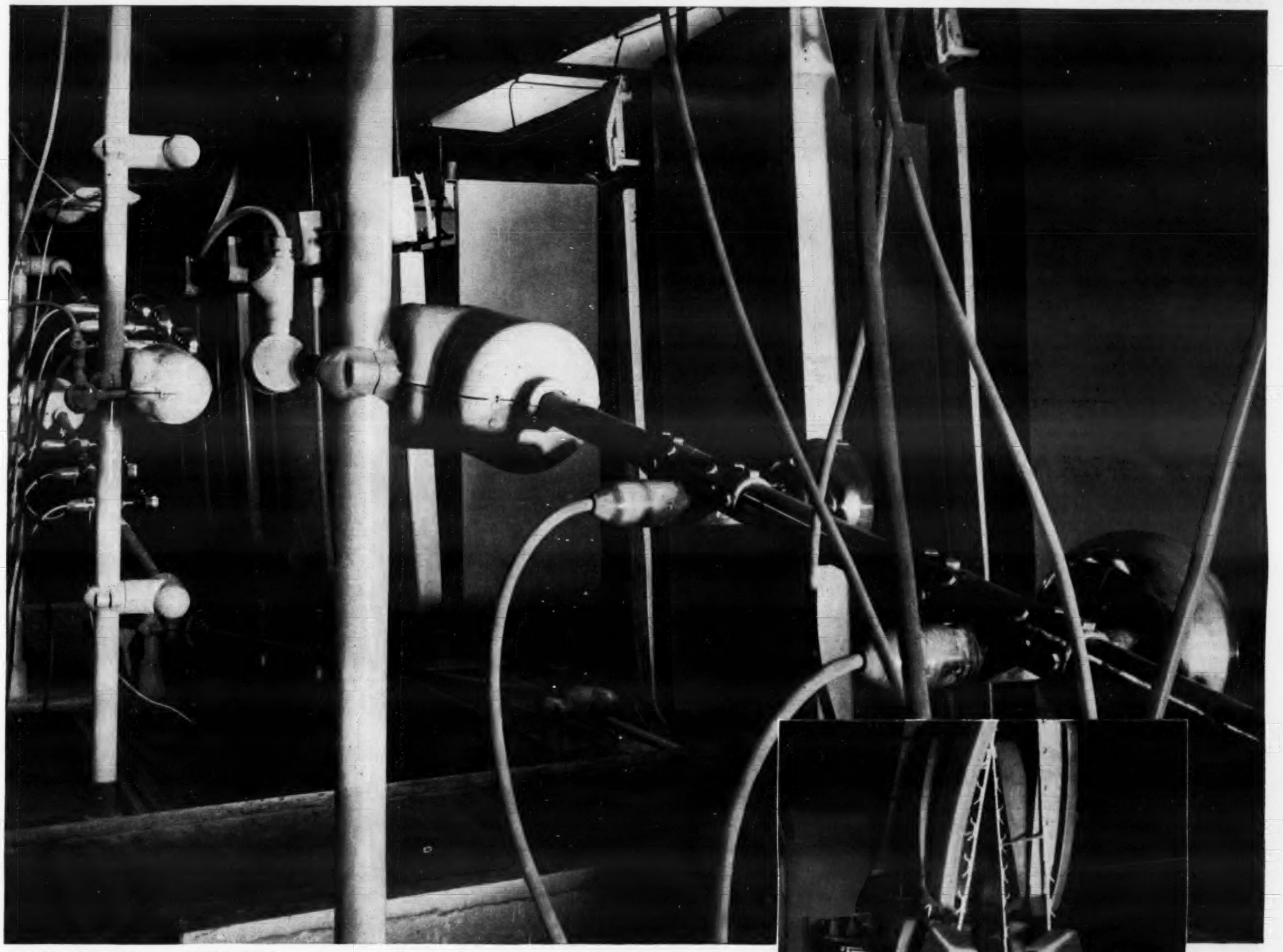
Current Employed— 15,000 amperes at up to 24 volts

This **MEAKER Anodizing Machine,** shown installed and operating at the new Hotpoint refrigerator plant in Cicero, is one of many **MEAKER** installations throughout the country.

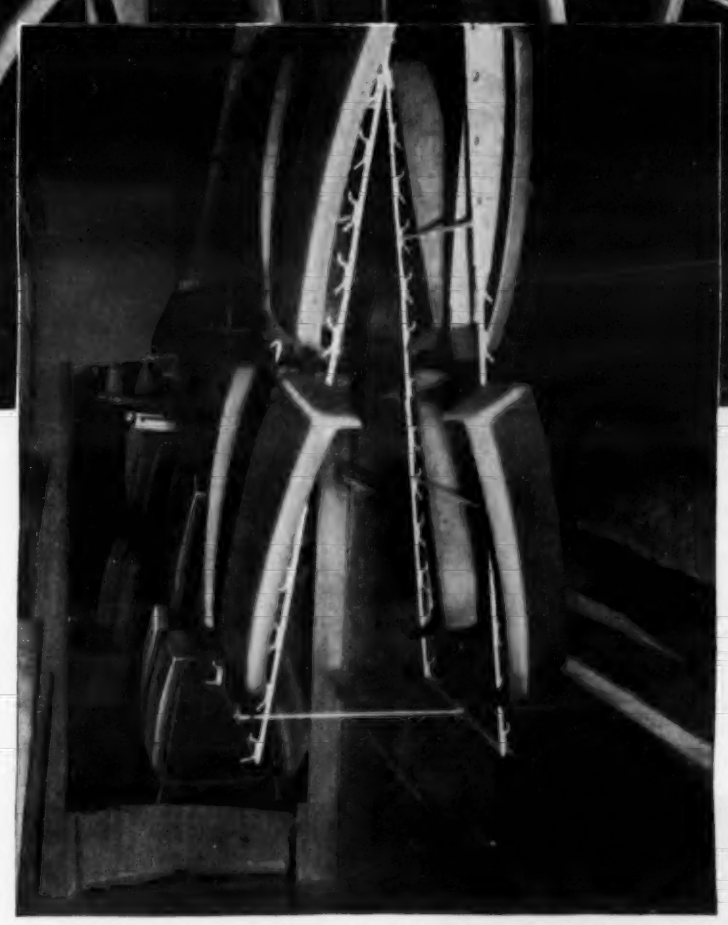
For general performance and quality of workmanship—to help manufacture the finest products possible—you can always count on THE MEAKER COMPANY to design and engineer the best possible Anodizing Equipment to fit each manufacturer's individual needs, regardless of size, design, and shape of product to be handled.

THE MEAKER COMPANY

1629 SOUTH 55TH AVE., CHICAGO 50, ILLINOIS



Durable white refrigerator NUBELITE *being electrostatically sprayed.*



Corrosion-resistant white NU-PON *Primer being flow coated.*

ANOTHER HOTPOINT *FIRST*

Contributes to Success of New Refrigerator Plant

Typical of the production progress evident throughout the new Hotpoint plant are two "firsts" in refrigerator finishing . . .

. . . the first flow coating of refrigerators.

. . . the first use of the modern electrostatic spraying equipment shown above.

These advances, including the use of corrosion-resistant white NU-PON Primer and durable white refrigerator NUBELITE, as well as the planning and setting up of the entire finishing line, are a result of the close cooperation of Hotpoint engineers and finishing specialists of the Nubian Industrial Division of The Glidden Company.

Congratulations to Hotpoint . . .

on the opening of your ultra-modern refrigerator plant. We share, in part, your pride of achievement. We are also proud that this year is the 33rd year of close business relationship between your company and ours.

THE GLIDDEN COMPANY

INDUSTRIAL FINISHES DIVISION

11005 Madison Avenue • Cleveland 2, Ohio

SALES OFFICES AND FACTORIES: San Francisco, Los Angeles, Chicago (Nubian Division — 1855 North Leclaire Ave.), Minneapolis, New Orleans, St. Louis, Cleveland, Reading, Atlanta and Toronto

Automatic Refrigerant Charging Is Followed By Probing With Electronic Leak Detector

(Continued from Page 16, Column 3)

rigid tests under high oven temperatures in Hotpoint's laboratories.

Temperature is maintained in the dehydrating ovens. Further heat is provided by operating the compressor at the starting high voltage, this serving to heat up the unit on the inside.

While the cooling system is being dehydrated, an operator watches an electrical signal board which automatically tells which, if any, of the units are not dehydrating properly.

In case it is necessary to remove one of the vacuum carts for repair or maintenance purposes, this can readily be done by the use of a small crane, and a new cart will take its place in the dehydration system in less than two minutes.

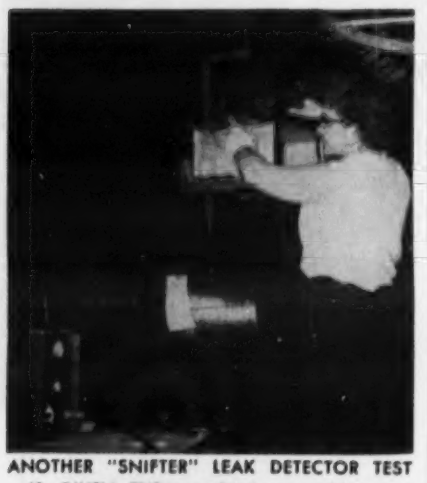
Following the dehydration operation, the cooling unit continues on a conveyor line into a hood where there is a low concentration of helium. If the unit leaks, helium gas is sucked into the unit, because of the high vacuum pulled by the vacuum carts during the dehydration process. The refrigeration system is then left to cool to room temperature.

Detection of helium in the cooling unit (a leak in the system is indicated if any is found) is done by a very sensitive electronic instrument. This instrument, a mass-spectrometer, will detect leaks so small that it would take 200 years for one ounce of liquid to leak out, Hotpoint engineers declare.

Three mass-spectrometers are used for this test, two in operation on the production line and one as a spare.

At the next station on the assembly line, the unit is charged with oil and

EVAPORATOR IS "HOODED" BEFORE START OF UNIT TEST, so that actual operating conditions will be more closely simulated.



ANOTHER "SNIFTER" LEAK DETECTOR TEST IS GIVEN THE completely assembled and charged cooling system as it goes into the upper floor test area. Here a worker uses the G-E Type "H" electronic leak detector.

"Freon" refrigerant. By use of a special automatic oil and "Freon" charging board developed by Acme Aluminum Alloys Co., the correct amount of the oil and refrigerant is charged into the compressor. This automatic operation eliminates pos-

WIRING HARNESS IS ATTACHED BY girl worker before unit is given a series of electrical and running tests.

sible human errors that exist in hand methods of charging.

After the unit is charged with refrigerant and oil, it is subjected to a thorough probing with the electronic Halogen leak detector.

Then the unit moves to an automatic dip tank, is painted, moves upstairs for wiring harness attachments and installation of sub-assembly parts.

The refrigerating unit assembly

(Continued on Next Page)

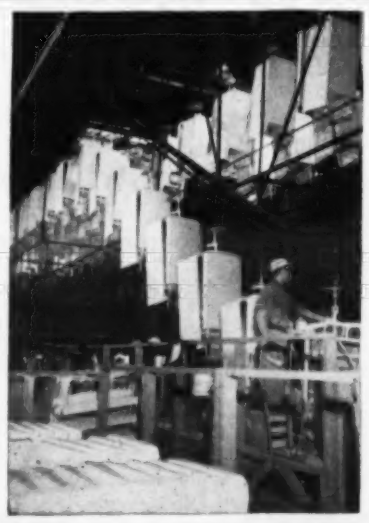
OZZIE AND HARRIET NELSON, STARS OF THE "OZZIE & HARRIET" radio and television shows who are scheduled to make a personal appearance at the formal dedication ceremony of the opening of Hotpoint's new multi-million dollar refrigerator plant, greet John C. Sharp, president, Hotpoint Co. and Mrs. Sharp. More than 7,500 Hotpoint employes and their families are expected to attend the gala open house on Oct. 23. (LEFT TO RIGHT) Ozzie Nelson, Mrs. Sharp, Harriet Nelson, and Mr. Sharp.

Now... to make the best Hotpoint has built the

From the industry's newest and most modern refrigerator plant will come the classic of all fine quality refrigerators.

▲Combining the refrigerating unit assembly with the cabinet is a hand operation, but a relatively simple one, because the unit fits into place on frame members, hangers, and brackets especially designed for the unit.

The main assembly conveyor line, which carries all component parts, goes directly into the component parts department, instead of having the component parts brought to the line. Main assembly line schedules are met right in their own departments. Lost motion is reduced to a minimum. ▶



Cooling units in operating test take two hours to pass through this air-conditioned test room, where constant temperatures and humidities are maintained. Operators check for proper operating characteristics, such as wattage, noise, freezing ability, and frost lines.

Hotpoint ...the Pacemaker

RANGES • REFRIGERATORS • DISHWASHERS • DISPOSALLS® • WATER HEATERS

Cooling Unit Testing--

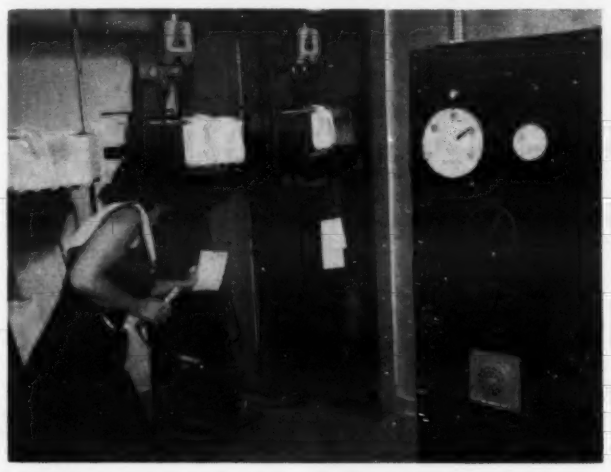
(Continued from Preceding Page)

then moves on to a series of operating tests.

First, a start box is hooked up and the compressor is operated for 45 minutes in a "shake out" test. Then comes a series of voltage tests.

To assure starting at low voltages, each unit is given a 95-volt starting test. To assure proper relay calibration, each unit then gets a 130-135 volt starting test. Then to protect the customer and comply with Underwriters' Specifications, each unit is given a thorough ground test. All these voltage tests are checked through a single board which has an operator in constant attendance.

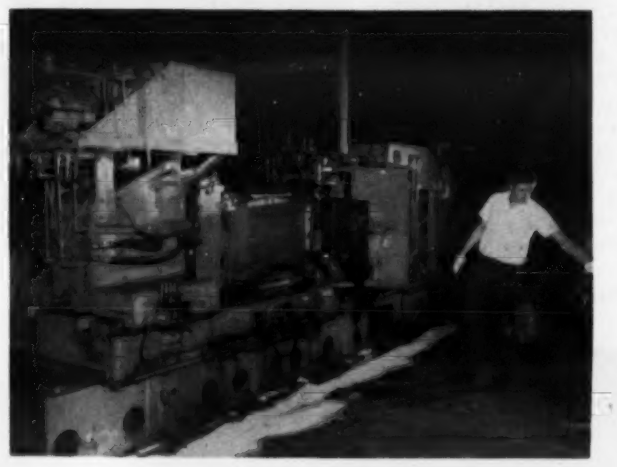
Next stop for the refrigerating unit assembly is the unit test room. Here the cooling unit is subjected to running tests which last about two hours. These two-hour tests determine whether the unit will cool properly, check its freezing ability, and its frost lines. One hundred and fifty units can be tested in an hour in this room, all while still moving on the conveyor line.



THROUGH A SOUND-BAFFLED TUNNEL the units pass from the operating test room into the sound and vibration test room. In this room an attendant conducts tests which not only check on noise and vibration, but which also determine whether or not the unit is starting correctly.

To make certain that the unit is running smoothly, with no noise, no jarring, and no slapping, the refrigerating unit passes through the sound and vibration test room. The units move into the sound and vibration test room from the unit test room through a sound-baffled tunnel, and the sound test room is completely sound-proofed. An attendant in the room conducts tests which not only check on noise and vibration, but which also determine whether or not the unit is starting correctly.

New Machines, Techniques Used In Fabrication of Cabinets



A PUSH OF A BUTTON, AND A REFRIGERATOR CABINET SHELL is bent into shape on a Struthers Wells tangent bender. All new and much equipment of special design is used in the plant to insure maximum production efficiency and quality in the product.

Fabrication of refrigerators, doors, and cabinets is done in the company's converted storage area of the electric range plant. Raw steel is brought to this plant by rail or truck, permitting an east-to-west operation. A 15-ton overhead conveyor crane loads and unloads the steel.

This plant is laid out with north to south fabrication lines, one for liners, one for doors, one for cabinets, and one for miscellaneous small parts. This allows Hotpoint to make each major part of the refrigerator in an in-line progressive manner.

Most of the raw steel is run through a leveler and then cut into the required sizes. From this point door steel goes into three giant 400-ton fabrication presses, then proceeds to special flanging, piercing, and welding machines.

Cabinet steel is fed into a notching press, then through a Yoder rolling machine. It moves on through Struthers - Wells tangent benders, then to a National Welder machine for welding in the refrigerator backs.

Liner steel is fed into a 400-ton press for blanking, piercing, and embossing. The liner material then proceeds through special flanging and "U" forming equipment, after which it goes through an automatic washing machine. Resistance 6-wheel seam welders weld the liners.

Food compartment liners are sent to the porcelain finishing department, which is located at the extreme north end of the building. In the preparation of the steel surface for porcelain, the liner passes through the largest Goodrich automatic spray pickling machine in the refrigerator industry. This Goodrich machine was built specially for Hotpoint.

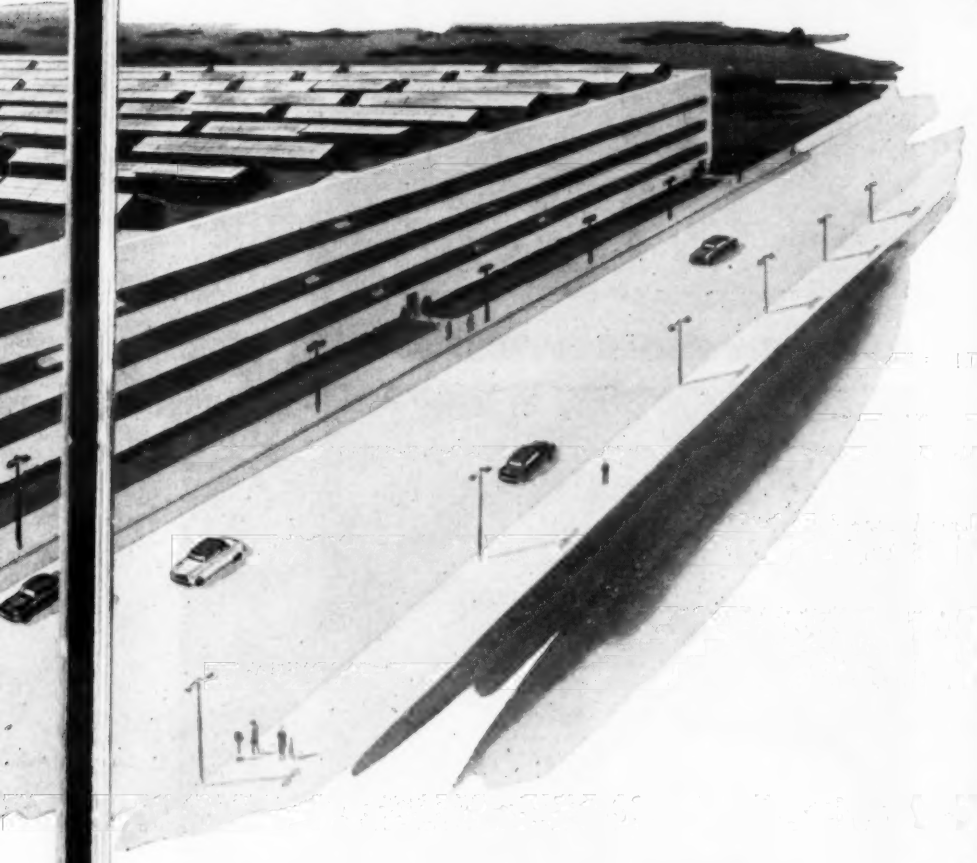
After the pickling process, the food liners move into the viterous enamel department by conveyor. Liners are dipped in the ground coat and pass through an electric drying tunnel, using infrared lamps for the drying process. The liners are then transported to the firing chains and sent into the electric furnace.

Following the firing, the liners are placed on the white coat conveyor which carries them to the white coat

(Continued on Next Page)

franchise even better-

World's Finest Refrigerator Plant!



In this brand-new Hotpoint refrigerator plant, which occupies over 1,000,000 square feet of floor space, machines throughout the plant were especially designed for Hotpoint's highly engineered refrigerator operations. Here, one refrigerator can be produced every 40 seconds, and each refrigerator is rigidly tested 14 times. This is the most advanced engineered production plant in the entire appliance industry. Each year, more than 60,000,000 lbs. of steel, 2,000,000 lbs. of copper and stainless steel, and 3,000,000 lbs. of vitreous enamel will be used to produce the finest refrigerators the world has ever known.

MORE REASONS WHY HOTPOINT is your most Valuable Franchise

1. A Full Line of Quality-Proved Appliances.
2. Backed by Extensive National Magazine Advertising.
3. Plus Radio and Television With the Smash-Hit—"The Adventures of Ozzie and Harriet."
4. Plus a Liberal Local Dealer Co-operative Advertising Program.
5. A Year 'Round Promotional Program With All Promotions Planned and Timed to Provide Greatest Selling Advantage At Retail Level.
6. A Comprehensive Sales Training Program.
7. Consumer Recognition of the Finest Quality Complete Appliance Line.
8. Hotpoint's Understanding of Your Problems With an Eagerness to Assist in Solving Them.
9. With Constant Engineering Research to Keep Hotpoint Years Ahead of the Industry.
10. Hotpoint is the Most Aggressive and the *World's Largest* Exclusive Manufacturers of Major Electric Appliances.

If You're Planning for Progress in 1954, You'll Be Wise to Talk Over the Advantages of Hotpoint's Full-Line Franchise With Your Hotpoint Distributor.

of Progress!

FOOD FREEZERS • AUTOMATIC WASHERS • CLOTHES DRYERS • ROTARY IRONERS • DEHUMIDIFIERS • CABINETS

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INLANDER-STEINDLER PAPER COMPANY

General Offices

11-13 NORTH GREEN STREET

CHICAGO 7, ILLINOIS

Protective Packaging for Every Purpose

A Sheet of Steel Becomes A Food Liner

(Continued from Preceding Page)

spray booth, and the liners are sprayed.

The liner continues through another infrared heat tunnel for drying. After drying some areas are wiped. Liners are then hung on the firing chains and go to the furnace for the burning of the finish coat. Then they are removed from the firing chain and placed on the transport conveyer which delivers them to the refrigeration assembly in the main plant.

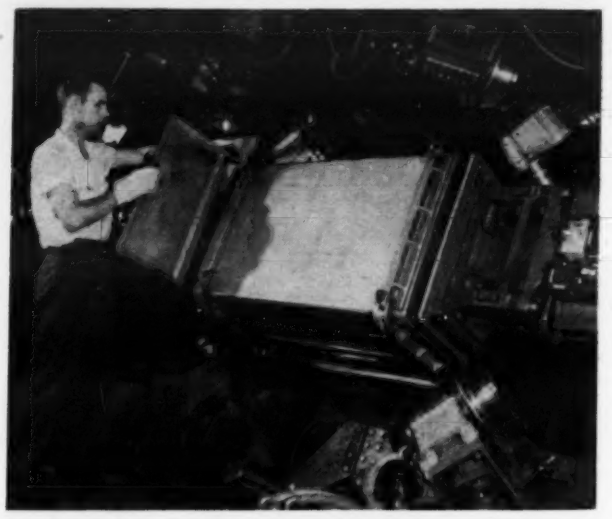
A storage conveyer provided for finished liners is used for scheduling purposes. The conveyer has a drop in the vitreous enamel department at the same location where the liners are placed on the transport conveyers. Another drop of the storage conveyer is located in the refrigerator assembly plant.

This setup permits the vitreous enamel plant to operate on an odd-shift basis without extra handling. If the refrigerator assembly line is not running, the vitreous enamel department can place the liners directly on the storage conveyer.

Vegetable trays are vitreous enamel coated and a complete setup is provided for this operation. It consists of dipping, reinforcing booths for ground and finish coats, and drying tunnels after each coat. These are electrically heated dryers.

The pans are transported by conveyer through all phases of the process. The hangers used on the liner transport and storage conveyer are designed to take both liners and pans. This transporting of either item on the conveyer does not interfere in

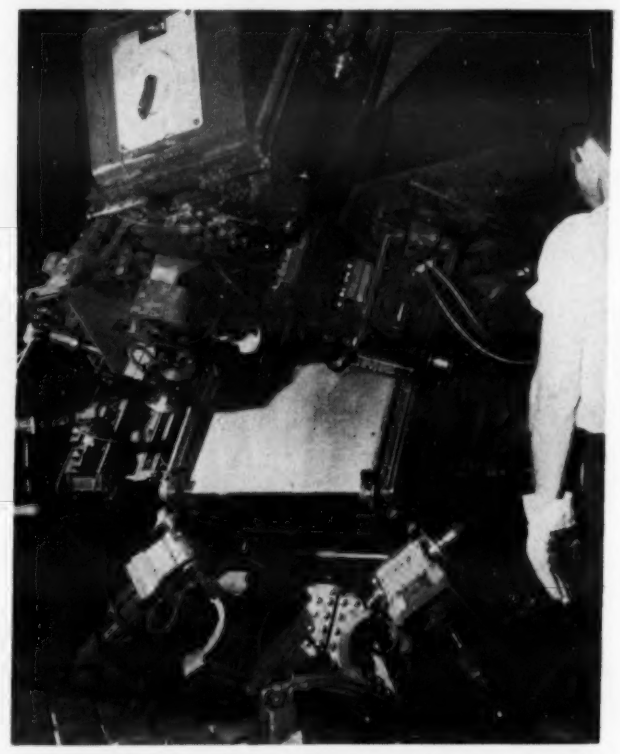
(Continued on next page)



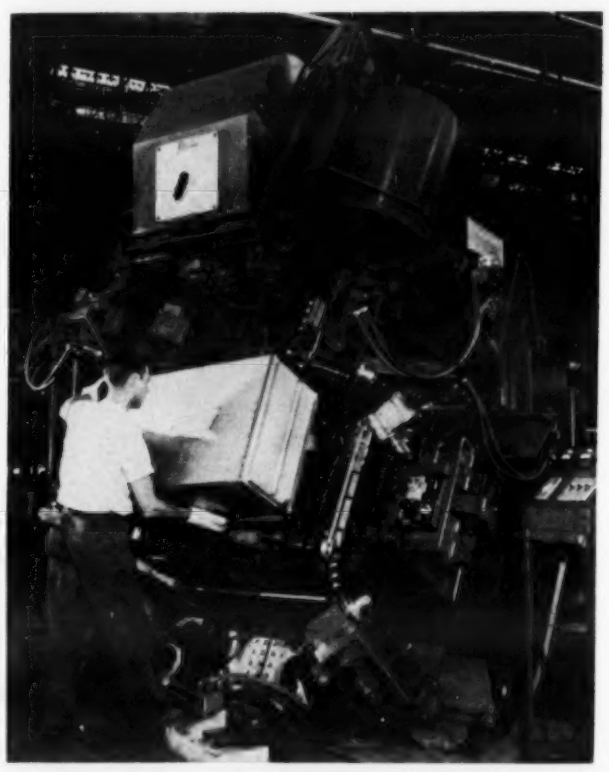
FINAL WELDING TOGETHER OF THE CABINET LINER IS DONE IN SINGLE OPERATION on this specially designed welder made by the Resistance Welding Corp. In this picture the operator slips the top and bottom of the liner into place, before the welding operation takes place.

LINER STEEL IS FED INTO 400-TON PRESS for blanking, piercing, and embossing operation.

LINER STEEL IS SHAPED INTO PROPER FORM with single stroke of a U-bender.



WELDING ARMS MOVE INTO POSITION, AND THE "OCTOPUS" (as the welder is known to employes) completes the job of welding the cabinet liner sections together at the push of a button.



COMPLETED FOOD LINER IS REMOVED FROM RESISTANCE WELDER MACHINE. Special equipment such as this not only speeds production operations, but insures uniformity of product.

CLEANING, REAMING, AND BUFFING FOOD LINERS, this group of workers has the responsibility of seeing to it that formed liners go to finish operations without imperfections or blemishes. Cabinets and doors are also buffed for better paint applications.

congratulates hotpoint

on the completion of its new refrigerator plant

Working hand-in-hand with the Hotpoint designing and engineering staffs, Jervis Corporation, a major Hotpoint supplier for over 15 years, creates exterior hardware to give Hotpoint refrigerators the last word in glamorous sales appeal . . . built-in beauty and service essentials favorable to "point of sale" action . . . plus long years of service that assure complete owner satisfaction.

JC JERVIS

CORPORATION

GRANDVILLE, MICHIGAN

Components Merge on Final Assembly As New 1954 Refrigerators Take Shape

(Continued from preceding page)

any way with the other. It is actually two separate conveyer systems merged into one.

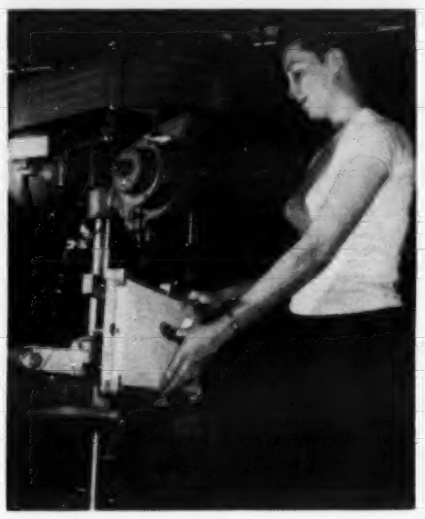
Refrigerator doors and cabinets are passed through a six-stage washing process consisting of an alkali wash, hot water rinse, cold water rinse, phosphatizing, cold water rinse, chromic acid rinse, and then into a drying oven.

A flow-coat machine automatically applies a resin primer coat. A vapor chamber allows the doors and cabinets to drain properly.

The parts are sent into an infrared bake oven. Next comes the spray booth for reinforcing the primer coat. The components then go into another bake oven.

After the doors and cabinets are allowed to cool for 20 minutes, they are sent to a sanding booth where the primer coat is sanded and the parts are tackwiped. The tackwipe process leaves the doors and cabinets tacky, the same as varnish does on furniture. This allows better coating adhesion.

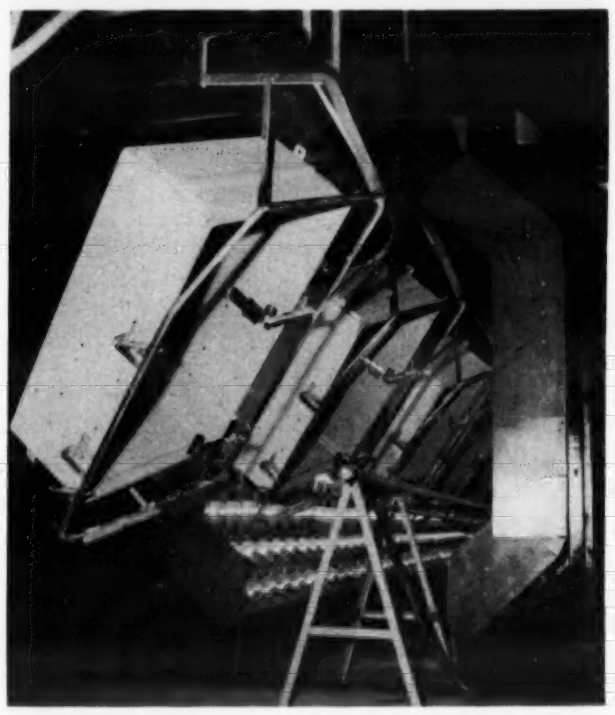
FIRST STEP IN GETTING A PORCELAIN FINISH on the cabinet liner is the "dip" process, wherein the liner is dunked into a vat of vitreous enamel, or "liquid glass" as the employes term it.



ASSEMBLY OF PLASTIC PARTS SUCH AS EVAPORATOR DOOR is done mostly by women employes using easy-to-operate machinery.

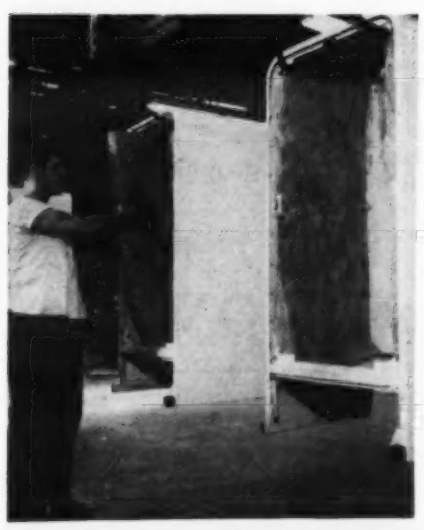
Refrigerator Door Assembly

SPECIAL FIXTURE TO HANDLE ANY SIZE DOOR is used on cabinet finishing line, where women workers use power tools to attach gasketing and hardware.

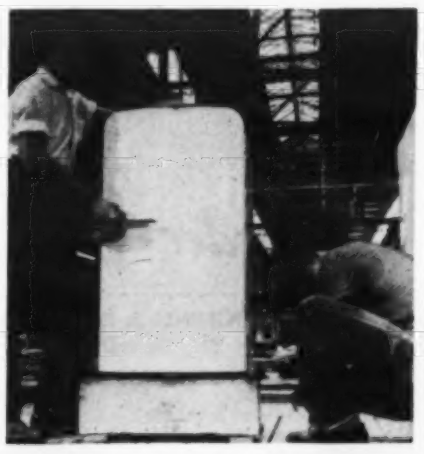


INFRARED OVEN IS USED TO DRY THE GROUND COAT prior to firing in high temperature furnaces of the refrigerator liners.

BRUSHING OUT THE CORNERS AND REAMING OPENINGS in the liner is work that girls can do as the conveyor lines move steadily along.



INSERTION OF CABINET INSULATION IS DONE ON CONVEYOR LINE which has brought finished cabinet shells to the main assembly line.



WHEN MATCHING DOOR MEETS THE RIGHT CABINET on final assembly line it takes only a few seconds of work with power tools to attach the door to the cabinet.

In the Ransburg No. 2 process the parts to be coated are grounded. Paint particles are charged with 90,000 to 100,000 volts of electricity. The paint particles are sprayed from bell-shaped spinners which rotate about 900 r.p.m. The particles, being charges, are attracted to the grounded refrigerator doors and cabinets. It is claimed that the Ransburg No. 2 process provides a faster painting operation, a more uniform coating, savings in unwasted paint and in labor costs, elimination of conventional booths and a lesser need for special types of ventilation equipment, commonly used in the industry.

(Continued on next page)

60 tractor crankshafts per hour with

Avey 12 STATION LINE-O-DEX

12 Station Transfer Machine—Hydraulically operated indexing mechanism—operations include drilling all angular oil holes plus connecting metering holes. Machine incorporates all Avey-draulic Torque-matic Units for Deep Hole Drilling with Avey Cam Units and Drill Heads for Meter Hole Drilling. Machine conforms to J.I.C. Standards.

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THE AVEY DRILLING MACHINE CO.

Cincinnati 1, Ohio

Many Special Production Devices and Tests Are Utilized on Main Assembly Line

COMBINING THE COOLING UNIT WITH THE CABINET is a simple hand operation. The cooling unit fits into the bottom back compartment and the condenser is secured vertically in place while the freezer compartment is put in the front upper part of the cabinet. Operators take about 10 seconds to complete the job.

TEMPERATURE CONTROL IS A HIGHLY IMPORTANT component of a modern refrigerator, and installation of the Ranco control, which employe is doing here, calls for competent and swift workmanship.

(Continued from preceding page)

up booth. Again into the bake oven for the final baking of the "Calgloss" enamel. They are then sealed, inspected, and moved to the final assembly in the main plant.

As the doors, cabinets, and cooling units move toward the final assembly line, one line takes the cabinets and doors to a section of the main assembly area where many different sizes of special insulation are inserted.

Then the cabinets are moved to the main line, where the doors are moved to a sub-assembly line for sub-assembly parts. This later merges into the main assembly line and the refrigerator moves on its way.

After the refrigerator is finally assembled, the refrigerating unit gets another Type "H" leak test, and another noise test, more rigid than the previous one.

Then, to test the sealing of the refrigerator door and the cabinet in general, Hotpoint makes use of a very rigid test in which a pressure is exerted inside the cabinet.

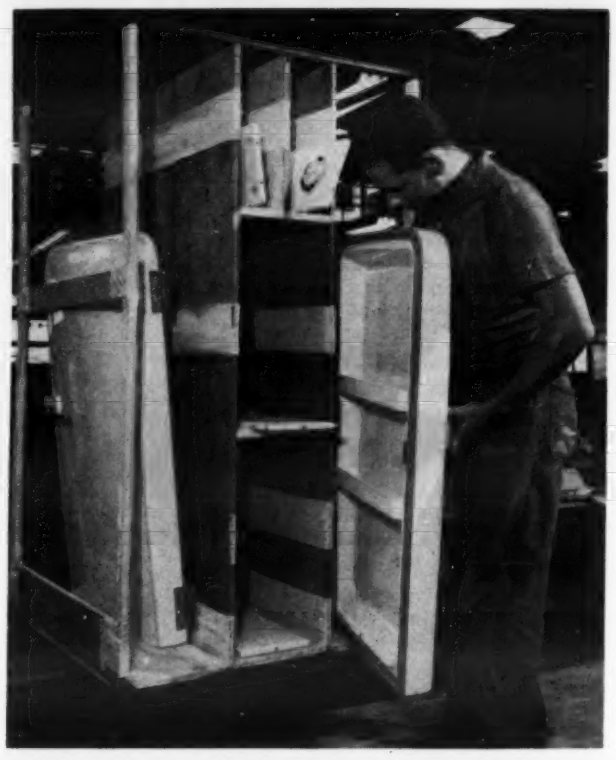
A gauge indicates the tightness of the seal, and an automatic instrument records the results, on the basis of which the cabinet is either accepted or rejected.

Then comes the final checking and general inspection. At this point the "Quality Control" checkers go into operation also, taking a certain percentage of completed refrigerators off the lines and running them for periods of time varying from two days to two months, to determine if the completed models coming off the line are up to their standards.

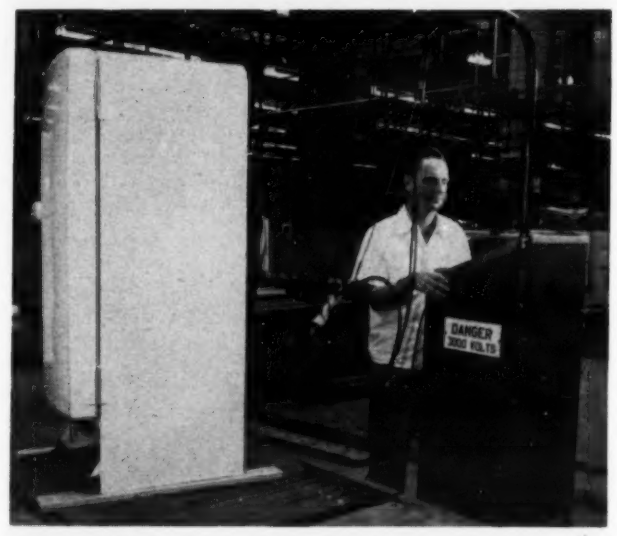
As the refrigerators reach the end

(Continued on next page)

Specially Designed Rack Carries Freezer and Cabinet Doors



SPECIAL "RACK" WHICH TRAVELS ON CONVEYOR LINE brings finished cabinet doors and freezer compartment doors to main assembly line.



FINAL TESTS ON THE ELECTRICAL SYSTEM, including ground and potential tests, are made near end of final assembly line.

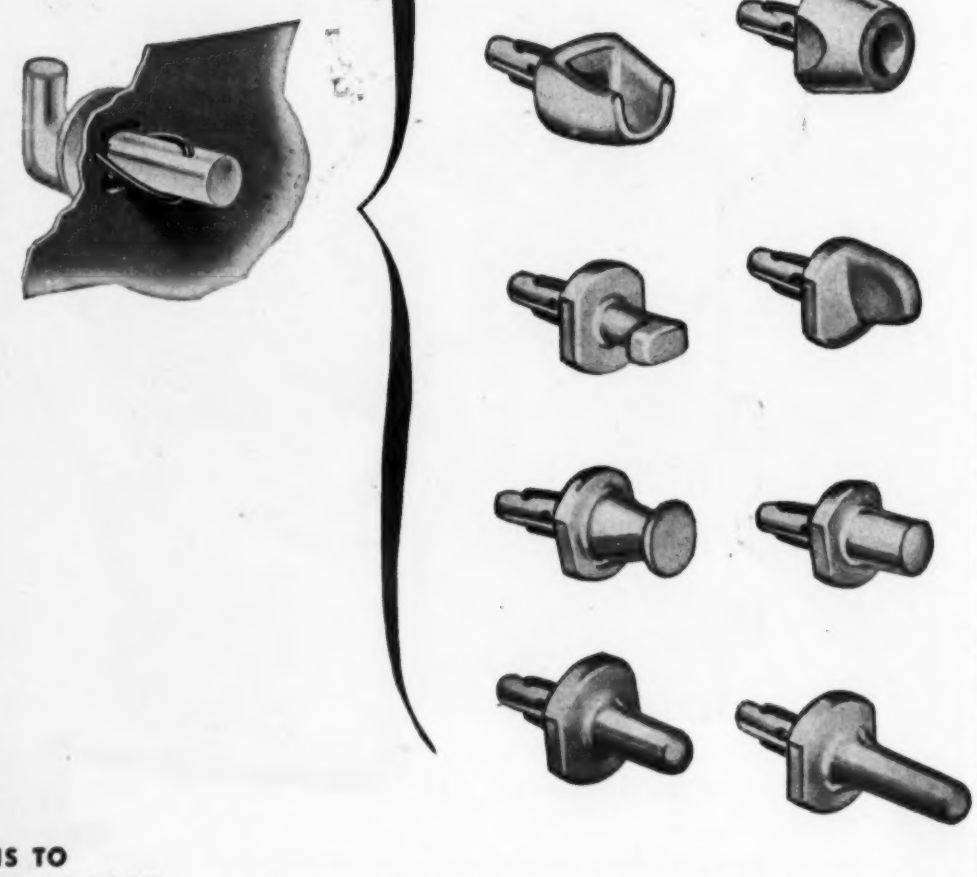
22 big-name Refrigerator Makers save with Spring-Lock Shelf Supports

UNITED STATES

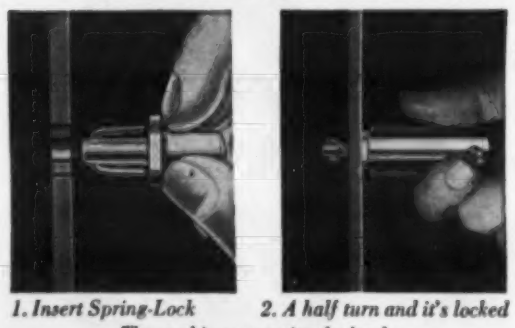
Frigidaire Division, General Motors Corp.
Philco Corporation
General Electric Company
Hotpoint Co.
Admiral Corporation
The Crosley Div. of Avco Mfg. Corp.
International Harvester Co.
Servel, Incorporated
Seeger Refrigerator Co.
King Refrigerator Corp.
Sanitary Refrigerator Co.
Glascock Bros. Mfg. Co.
Buhl Manufacturing Co.
Acme National Refrigeration Company
Astral Industries

CANADA

Frigidaire Products of Canada, Ltd.
Canadian General Electric Co., Ltd.
Liquid Carbonic Canadian Corporation, Ltd.
Tudhope Specialties, Ltd.
Fleet Mfg. Co., Ltd.
Racine Manufacturing Co., Ltd.
Taymouth Industries, Ltd.



HERE'S HOW SIMPLE IT IS TO INSTALL SPRING-LOCK



1. Insert Spring-Lock *2. A half turn and it's locked*
The steel insert carries the load.

Twenty-two leading refrigerator makers in United States and Canada find Simmons plastic SPRING-LOCK the ideal shelf support. It is strong, attractive and low in cost. Installation is blind, easy, quick, secure. Insert the fastener, then a half-turn causes the spring-steel legs to grip panels securely.

Design flexibility of SPRING-LOCK makes it suitable for a variety of applications: shelf supports, cover knobs, drawer pulls and many other uses. Any shape head can be molded in any color; the heart of steel, around which the plastic is molded, provides strength-plus.

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1954 EDITION

A complete listing of all manufacturers of refrigeration and air conditioning products in one useful volume. Contains names, addresses, and personnel of manufacturers and wholesalers. Tells where to get it when you need to know.

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AUTOMATIC SPRINKLERS,
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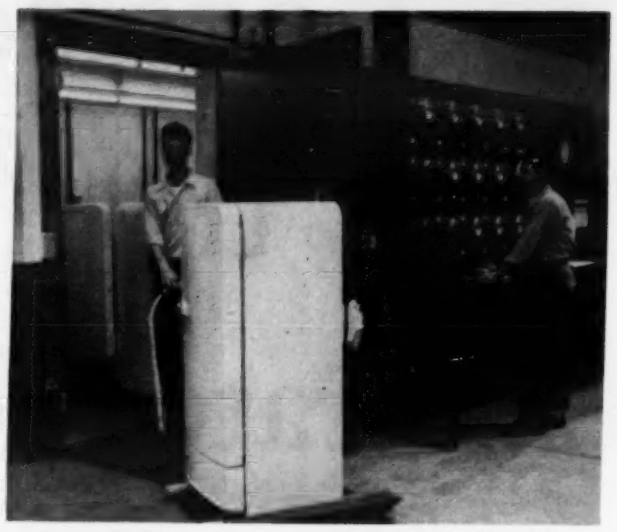
POWER AND PROCESS
PIPING

Final Checking, Noise-Vibration Tests Complete 9.8 Mile Refrigerator Trip

CHECK ON DOOR SEAL IS accomplished by pulling through a metal strip of predetermined thickness. If strip comes through too easily, seal is incorrect and cabinet is rejected until adjustment has been made.



A "MAIN STATION" OF THE QUALITY CONTROL DEPARTMENT is set up near the end of the final assembly line, and a certain percentage of finished models are taken off the line and placed in special test rooms (as shown here) for a variety of tests that may last anywhere from a few hours to two months.

(Concluded from Page 22, Column 5)

of the assembly line and flow onto the crating line, each individual refrigerator picks up the bottom cardboard packing from an automatic feeder underneath the roller line. This eliminates an additional packing operation.

As each refrigerator moves on, additional packing and crating materials are added. The refrigerator line finally merges with the electric range line in the warehouse area.

Unit inspection travel card (see top of page 24) flows right along with the cooling unit through every testing and assembly process. As each test takes place a punch is made by the operator on the card. Each punch is keyed differently. Later on the assembly line if the unit fails to measure up to the set specifications, it can be traced to the operator through the keyed punching system. It is a foolproof check to make sure that no faulty refrigerators leave the Hotpoint plant.

One feature found in the new refrigerator plant not found in other plants is the reversible storage conveyer unit. This storage unit will be used for (1) a protection bank to insure production on the refrigerator assembly line; and (2) the making possible of simultaneous scheduling of two models on the assembly line while the fabrication line is running other models.

The warehouse of the new Hotpoint refrigerator plant has been specifically layed out and designed for efficient storage and shipping of ranges and refrigerators. Three railroad tracks are located in the shipping area. Thirty-six freight cards can be placed in loading position within the building.

In loading freight cars with appliances for shipment, Hotpoint uses the staggered loading method plus a steel strapping system, both devised by the company's traffic and shipping department, and which have been adopted by many other companies.

One feature of the warehouse setup permits Hotpoint to ship mixed car lots to distributors and dealers. A conveyer from the range plant merges with another line from the refrigerator plant and feeds into each of six bays. These bays are 100 ft. wide and 300 ft. long.

Overhead cranes above each bay allow rapid storage of ranges and refrigerators and greatly assist in the making up of mixed carload shipments. Ranges are crated at the end of the assembly line in the warehouse, while refrigerators are crated at the end of the assembly line in refrigerator plant.

A centralized system permits crane operators in each bay to direct ranges or refrigerators into a desired area, eliminating the use of hand cards and human handling of crates.

When a refrigerator or range is moved into a designated bay, it is directed to one of two conveyers in the bay. One conveyer is used for make-up and the other for movement of the appliances into storage.

The entire warehousing and loading system is geared to eliminate human handling as much as possible. It enables Hotpoint to load directly into cars *from assembly lines.*

Here are some "statistics" on the new Hotpoint refrigerator plant:

It will produce one refrigerator every 40 seconds at top capacity.

It occupies 1,000,000 sq. ft. of space.

In one year the new plant will eat up 60 million lbs. of steel, 2 million lbs. of aluminum, and 428,000 lbs. of copper and stainless steel.

Over 98% of the equipment in the new plant is new and most of the equipment is specially designed for Hotpoint's highly engineered operations. Each refrigerator is tested 14 times on the assembly line before final crating and shipping.

The new plant will employ about 1,500 workers.

The warehouse can store 25,000 ranges and 40,000 refrigerators.

Conveyor lines, if combined, would stretch 9.8 miles.

UNIT INSPECTION TRAVEL CARD

DATE	SYMBOL NO.	SERIAL NO.

1 COMPONENTS INSPECTOR

JOINT 1	JOINT 2
JOINT 3	JOINT 4
JOINT 13	JOINT 14

2 FLOW TEST

3 250# LEAK TEST

4 DEHYDRATION

5 HELIUM TEST

6 CHARGE

7 TYPE H TEST

8 95 AND 130 VOLTS

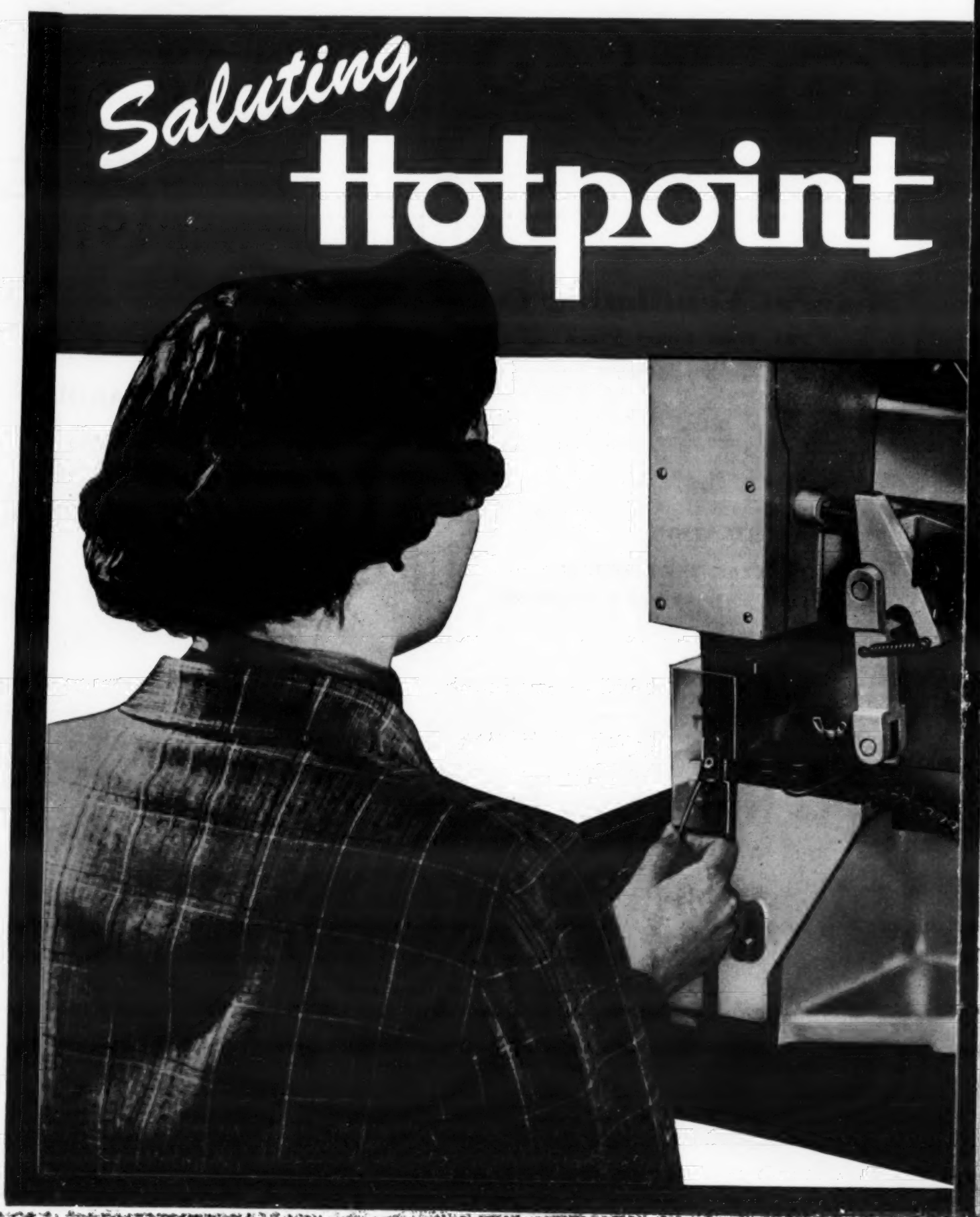
9 GROUND TEST

10 COLD TEST

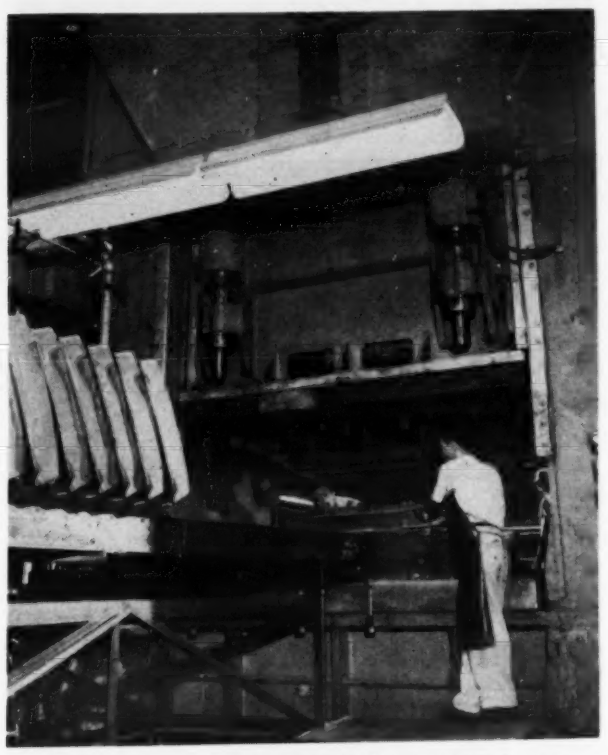
11 NOISE TEST

FINAL GROUP SYMBOL

SECOND GROUP SYMBOL



One of Many — —



ONE OF THE MANY GIANT FABRICATION PRESSES USED IN MAKING REFRIGERATORS at the new Hotpoint plant. The operation of this press is a simple one. A pice of steel is fed into the press, the die comes down, and it draws a refrigerator door, in just 15 seconds. Simple as it may seem, many hours of skills and technical know-how are behind this one operation. Only a close association between Hotpoint engineers and suppliers of production equipment and materials, has made this possible.

Visual Design Section Personnel Develop Products To Meet Changing Demands

CHICAGO—What is the function of a "Visual Design Section" in a household refrigerator manufacturing operation? Where does it fit into the picture, and how are its functions carried out?

A member of the Hotpoint Co.'s Visual Design Section describes the activities of his group in the following manner:

"Selling refrigerators in today's highly competitive market presents many problems to the manufacturer. To obtain a share of the consumer's appliance dollars is a day to day struggle in the industry. Each year brings new models of refrigerators which are displayed on the floors of retail stores throughout the United States. Each has a separate story to tell and sell the consumer.

"In analyzing the refrigerator market today, one refrigerator differs little from the other. All have pushbutton defrosting, automatic defrosting, freezer compartments, butter bins, vegetable bins, egg racks, door shelves, lamps, bells, and whistles. Sizes and prices vary and each manufacturer claims that his refrigerator is the best and the finest on the market.

"What then must a manufacturer, his engineers and designers do to compete successfully with other brands?

Problem Complex Because Of Market Conditions

"The problem is a complex one. In order to get a share of the consumer's dollar, Hotpoint must have something more to offer than just price.

"It is here then that manufacturing know-how, engineering, and styling must make themselves felt now more than ever.

"The first and foremost problem the Visual Design Section of Hotpoint has is to design a refrigerator that will sell. The American homemaker must be conditioned to *desire* this refrigerator over all other brands on the market.

"The *first* reaction to any product is often the deciding factor in making a choice. The first thing she sees when shopping around for a new refrigerator is, of course, the appearance.

Appearance Important In Gaining Attention

"Appearance in this instance often means sales appeal. Therefore, the look of the cabinet, the exterior door, hardware, and trims will make the first impression for good or for bad. This first impression will also tend to convey the thought that this is a quality product, a mediocre product, or a poor product. Hence, Hotpoint has strived to have the outward appearance of all its' products reflect the quality of sound engineering, careful and exacting manufacturing, and the good will and integrity of the company.

"Having created this good impression in the homemakers' mind, we expect her to look for more tangible proof that this refrigerator is exactly what she must have. Good and sensible features must be available inside the cabinet. These features again must have the fine appearance consistent with the quality made apparent at the first glance. Evaporator doors, shelves, meat and vegetable pans, and buttter conditioner all must be finished in good taste and of lasting design value.

"Where color is used, discretion and a fine balance between the sterile white and the too often exuberant shades of all the colors of the rainbow must be kept under control for lasting satisfaction rather than temporary stimulus.

Starting Design Comes Many Months in Advance

"The design of a new model refrigerator starts about 12 to 18 months before actual production begins. Already producing its 1954 line of refrigerators, Visual Design has plaster models of the 1955 models and is beginning to think about the 1956 models.

"About June of 1952, the first designs for the 1954 models were getting under way. Seven outside design consultants, all prominent in their field, were asked to design a refrigerator for Hotpoint. Along with this, Ray Sandin, Manager of Visual Design Engineering, submitted his own design. This made a total of eight such designs that were to be considered.

"After the eight designs were finished, they were submitted to Hotpoint Management. From these, two designs were selected. Accurate plaster models were made of these two designs and presented to top Management for approval. Hotpoint's own design was selected for 1954.

Numerous Designs Considered Before Decision Is Reached

"While it took eight designs for the cabinet before a final decision was rendered, it took more than 20 different designs for the 1954 refrigerator door handle and nameplate. This is another example of the exacting care and close attention to detail that does so much to lift Hotpoint's products above competition.

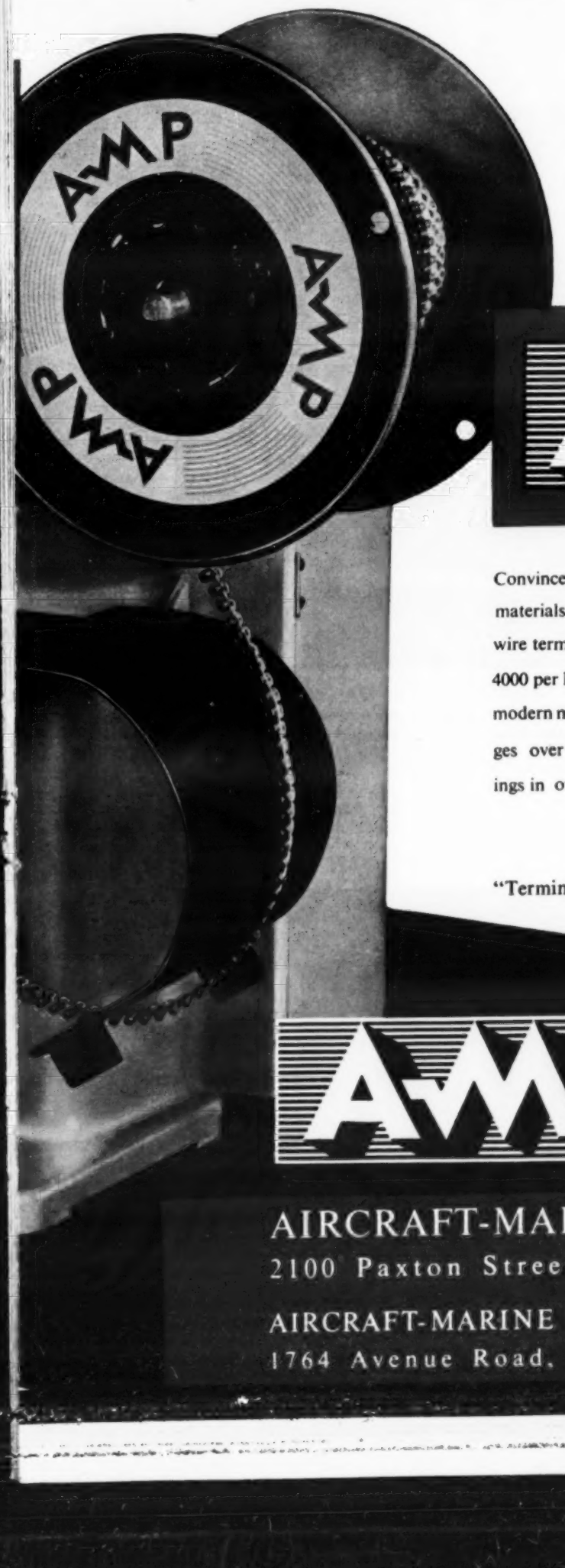
"Visual Design Engineering, for the first time in the appliance industry, has introduced a new kind of styling on the 1954 refrigerator models. Called 'contour' styling, this innovation in design of appliances give the 1954 line a 'new look' in refrigerators.

"The crisp classic styling as expressed in Hotpoints' newest refrigerator line has the tailored look and distinctive appearance that the American homemaker wants for today's modern home. It complements her kitchen and is a perfect match for her other contemporary appliances.

Section Has Many Other Functions Besides Design

"The Visual Design office, in addition to originating appearance design, also prepares the necessary models, detail drawings, and full size contours of all of Hotpoint's products. From these, the engineering sections complete working drawings and specifications for tools and production.

"In order to retain the high quality of appearance design, close cooperation exists between appearance designers and engineers. As changes and compromises become apparent, close attention to detail, proper use of materials and finishes, and continued study and restudy of form, texture, and color assures a finished product of highest quality and consumer acceptance."



AMP

Convinced that quality products can be assembled only from quality materials, Hotpoint uses AMP automatic machines to provide high grade wire terminations at high speeds. Terminals applied to wire at the rate of 4000 per hour have made AMP automatic machines invaluable in meeting modern mass production requirements. Boasting unusual design advantages over similar items, these terminals make possible tremendous savings in over all wiring costs.

"Terminations as fast as the operator can insert wires."

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Salesmen Will Help Create New Manual

CHICAGO—With the opening of Hotpoint's new refrigerator plant and the newly mailed demonstration techniques form to its dealers across the United States, the 1954 sales training manual takes on added importance.

The new refrigerator plant with its advanced ideas in manufacturing and production will bolster the sales story to present to retail appliance customers, the company believes. The form which will help design and create a more effective sales training manual and present new and different demonstration ideas to help retailer sell for appliances, is expected to make the 1954 Hotpoint manual among the most effective ever produced by the company.

"Because retail salesmen are closest to the point of sale in appliances, their ideas for demonstrations are going to be used in the 1954 sales manual," D. D. Thompson, sales training manager for Hotpoint, said.

"The idea here is that an exchange of demonstration ideas to close sales would be incorporated into the sales manual," he explained. "This would make the manual more effective for the retail salesman and help him in his daily selling," Thompson added.

The questionnaire asks for the best demonstration ideas used in selling refrigerators, freezers, ranges, water heaters, automatic washers, dryers, ironers, dishwashers, Disposalls, room air conditioners, dehumidifiers, and kitchen cabinets.

Cooling Unit Dehydration Under High Vacuum Insures Dry System

CHICAGO — The dehydration process and system used at Hotpoint's new refrigerator plant is said to be the only one of its type used in the refrigeration industry today.

This dehydration system was designed to Hotpoint's specifications by the Consolidated Vacuum Corp.

The cooling unit moves upward from the main floor assembly and testing area to the dehydration system. As the unit moves toward dehydration, it is stopped for a vacuum cart attachment. Four cooling units are attached to each vacuum cart. A total of 82 vacuum carts are used on the dehydration system.

One of the most important parts of dehydration of the unit assembly is the vacuum cart connecting device, designed for Hotpoint by Production Control Units Corp. This connector underwent months of rigid tests under high oven temperature before final acceptance. This is the connecting device that is used at the end of the cart connecting tube and the cooling unit.

The vacuum carts with refrigeration units attached move into the dehydration oven. This oven heats up to the correct temperature in 10 minutes. Meanwhile, the vacuum carts are pulling an exceptionally high vacuum in the cooling units. In some instances the cart pulls a "practically perfect" vacuum.

The "nearly perfect" vacuum in the cooling systems going through the dehydration process is accomplished through the application of the new diffusion pump principle, and the installation in the new Hotpoint plant is said to be one of the first of its kind for this type of application.

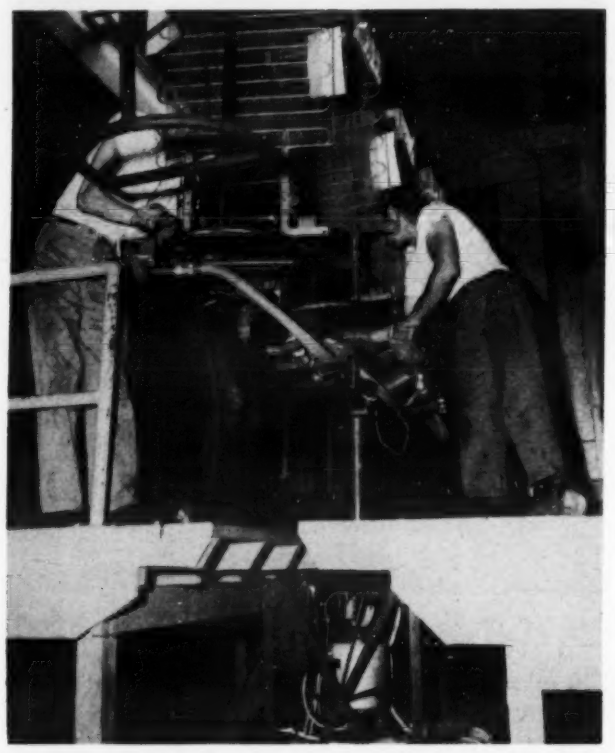
The carts with cooling units attached move back and forth for two hours. In this time the units are becoming dehydrated. If the unit or units are not dehydrating properly an automatic signal board sounds off indicating what unit is faulty. This unit is then marked as it leaves the dehydration oven and is later taken off the line for testing.

If a vacuum cart should break down during the operation, a 2-ton overhead crane is used to replace the faulty cart with a new one. The operation takes less than two minutes. The faulty carts, if the faults are minor, are repaired and put back into service right at the area of cart removal.

In addition to the high temperature maintained by heating apparatus in the dehydrating ovens, further heat is provided by operating the compressor at the starting high voltage, this serving to heat up the unit on the inside.

Since the dehydration system is so automatically operated, on a two-shift basis, Hotpoint will make more efficient use of its manpower.

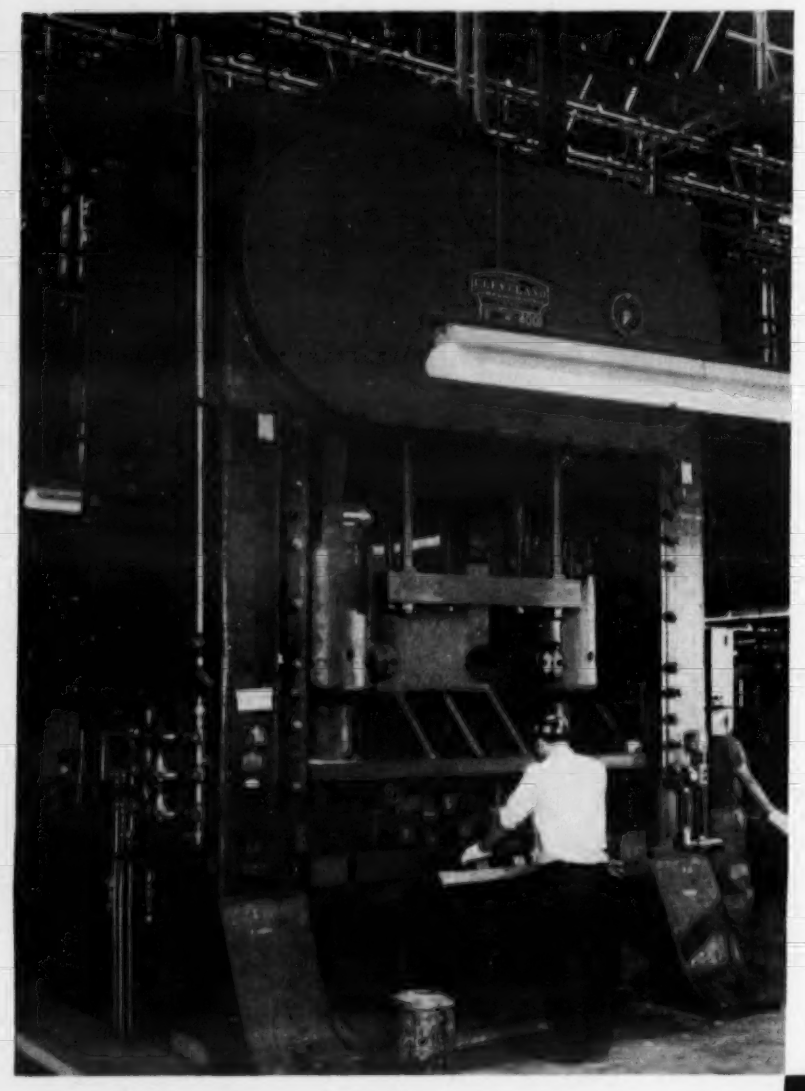
Unique 'Vacuum Cart' Moves With Unit All the Way Through Dehydration Oven



A VACUUM IS HELD ON ALL UNITS GOING THROUGH DEHYDRATION OVEN by means of "vacuum carts" especially designed for this job by Consolidated Vacuum Co. Four cooling units are attached to each cart (as shown here) and the cart travels along under the conveyor line, traveling on its own conveyor line (below).

REMOVAL OF IMPROPERLY OPERATING VACUUM CART and replacement with another is performed quickly and easily with a movable crane, so that no holdup is experienced with the movement of the cooling units through the dehydration oven.

PERFORMANCE OF VACUUM CARTS IS CHECKED ON CONTROL BOARD, and if a cart starts to operate improperly, a light flashes and the operator is able to determine which of the carts has gone wrong.



WE'RE PROUD OF HOTPOINT'S NEW REFRIGERATOR PLANT TOO!

This Cleveland Four Point Press forms outer case bottoms for 7 and 9 cubic foot Hotpoint refrigerators in their new refrigerator plant.

Naturally we're proud that 14 Cleveland Presses are used in the "world's most modern refrigerator plant" geared for maximum efficiency and quality production of "Tomorrow's refrigerator . . . Today."

If you too are interested in outstanding press operation, be sure to check the many Cleveland advantages. Learn how the Cleveland (patented) Drum Type Friction Clutch revolutionizes press operation. Write or call today!

A-8411

Extra long gibbing and rugged frames assure even slide pressure for smooth draws as in this outer case bottom.

THE CLEVELAND PUNCH & SHEAR WORKS CO.

THE CLEVELAND PUNCH & SHEAR WORKS COMPANY

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Conveyors By the Mile Help Speed Assembly Work

CHICAGO — Approximately 9.8 miles of overhead conveyors are used to assist in the manufacture of refrigerators at Hotpoint. This conveyor length is the summary of 35 separate conveyor systems. The types of overhead conveyor systems could be classified as follows:

1. Transportation conveyors
2. Storage conveyors
3. Process conveyors

The transportation conveyors move the major refrigerator parts from the final point of their fabrication to the paint systems; then from the paint systems to the points of usage in the Final Assembly Department. A transportation conveyor system is used to move insulation from the box cars to the usage and storage points. Storage conveyors provide stock cushions, both in process between fabrication points and in painted form before final assembly. The storage conveyors before final assembly hold 8 hours of each major fabricated part. These conveyors were made reversible for flexibility in storing different models.

The process conveyors move the major parts through the paint systems, such as vitreous enamel and synthetic enamel.

The system which assists in the assembly of the refrigerator unit is a combination transportation and process type of conveyor. This conveyor is routed to the ends of the major unit sub-assemblies. It moves the sub-assemblies to points where they are joined together while on this conveyor; then through processes such as dehydration, paint, and the Cold Test Room; then transports the completed unit to the Final Assembly Department.

The finished refrigerator is transported into the warehouse by means of a floor conveyor and in the warehouse the floor conveyor disburses the completed unit into storage bays and portions of the floor conveyors are used for box car makeup. Then there are small floor type conveyors which are used in sub-assemblies of doors, etc.

Storage on Overhead Lines

The Hotpoint refrigerator plants are conveyorized for all major assembly operations and most of the minor operations. Overhead conveyors are used for storage purposes where banks of parts are required to take care of model changes and to protect the assembly line.

The conveyors for the major parts in the Refrigerator Assembly Department are reversible for greater utility. Hanger construction on the conveyors in some areas has practically given the effect of two conveyors in one.

In other words, the hanger takes a very large component which is hollow and the hanger is constructed so that an entirely different component runs over this machine and through different processing and is hung on the same conveyor and on the same hanger but is suspended inside the other component in a manner which neither part is effected by the other.

The cabinet outer case door, all press parts are made in one building and processed through the various finishing systems, all handling and transportation being by conveyor.

After the parts have been finished, either painted or porcelain, they are placed on a transport or storage conveyor and delivered to another building for assembly.

In the Unit Plant there is a continuous conveyor that passes through the various departments, picking up the components made in each department and finally progressing through an area where the components are welded or bolted together to form a completed unit.

The completed unit continues on this same conveyor and goes through all processing such as leak testing, dehydration, charging or refrigerant and oil, painting, performance testing, and finally progresses into the Refrigerator Assembly Department where the unit is removed for assembly to the refrigerator.

This particular conveyor is unique in that each of the departments making a component for the refrigerator units actually places the component on the assembly in his own department. The conveyor hooks are numbered for scheduling purposes.

Hotpoint Service Publications To Tell Dealers How Refrigerator Is Made

CHICAGO—Development of product handling and service information designed to see that refrigerators reach customers' homes in the same condition of tested quality that they were in when they left the factory is one of the projects of the Hotpoint Product Service department for 1954.

An expanded program of dealer education on service work is also part of the program.

Hotpoint Product Service will publish a complete service educational page of part catalog details showing exactly how Hotpoint refrigerator models are put together, and the exact placement of all parts which will require service.

A complete educational program will be launched, says E. H. Ruesch of the Hotpoint Product Service department, in which through visual education devices all dealer servicemen will be given detailed descriptions of Hotpoint refrigerator construction features, operational functions, operational expectancies, and the kind of advice to be given to customers to enable them to get the most out of their refrigerator.

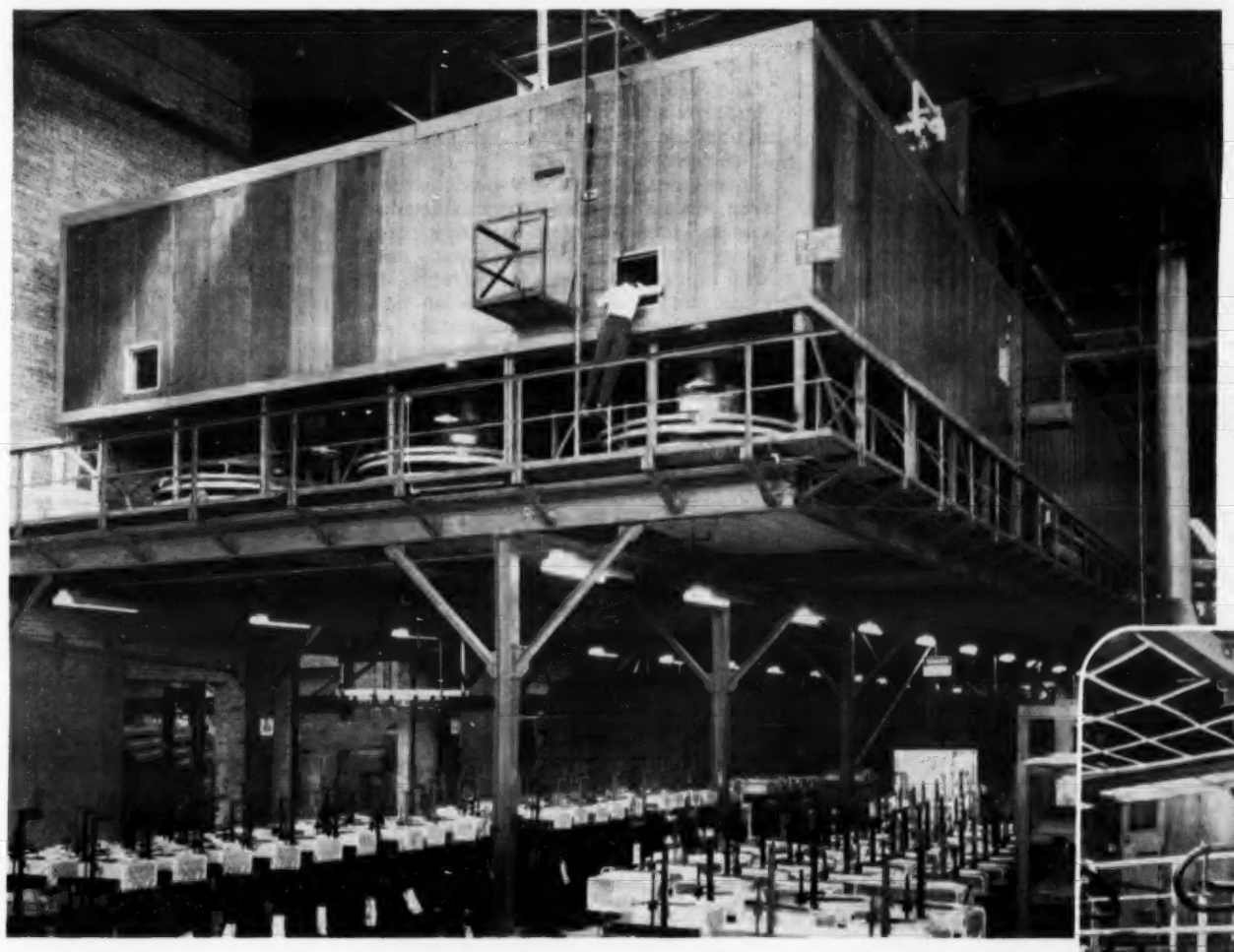
Hotpoint Product Service is strongly recommending that each of their dealers adopt the pre-installation inspection of the refrigerator. This will eliminate any concealed damages which will affect the operation and also assure the customer of a completely inspected and checked refrigerator for their use, says Ruesch.

This program, he says, will also mean that the crate is removed at the dealer's place of business and a thorough check made at that point. Hotpoint Product Service is also recommending an "Okay" tag which will give the customer assurance of the inspection.

A separate Refrigerator Service Manual is to be published to cover the 1954 Hotpoint refrigerator line. The manual, designed to be complete in all details, is intended as an advisory book to increase the serviceman's know-how when rendering service to a 1954 refrigerator model.

Condenser and Compressor Assemblies Meet, Refrigerating Unit Is Readied for Next Step

SUB-ASSEMBLIES MOVE BY CONVEYOR LINES to meet other sub-assemblies, and eventually join the final assembly line where the complete refrigerator is assembled. In this picture workers attach completed condenser assembly to the compressor and mounting frame assembly.



Left: Rear view of oven (36′ x 137′ x 8½′) through which refrigeration units pass six times while under high vacuum pumping.

•

Below: Operators connect four refrigeration assemblies to each CVC vacuum pumping dolly as the conveyor approaches the oven.

Here's the first continuous *high vacuum* dehydration system for assembled home refrigeration units

It's *CVC's* revolutionary high vacuum drying system now in operation at the new Hotpoint plant in Chicago.

The continuous high vacuum method was chosen over others because it's a lower-cost way to do this job better. Better because it gets rid of more moisture by pumping it out, thus reducing "freeze-up" rejects. More economical because much less handling is required and because *CVC's* high speed, high vacuum pumps cut processing time to the allowable minimum. This means refrigeration units can now be dried faster and cheaper than ever before.

CVC's broad experience in designing and manufacturing similar continuous high vacuum systems for TV tube evacuation insures efficient and trouble-free equipment for your dehydration job. To find out more about how high vacuum dehydration can be used to dry your product, write *Consolidated Vacuum Corporation, Rochester 3, N. Y.* (a subsidiary of Consolidated Engineering Corporation, Pasadena, California).

formerly DPi Vacuum Equipment Dept.

CVC

Consolidated Vacuum Corporation

Rochester 3, N. Y.

designers and manufacturers of high vacuum equipment

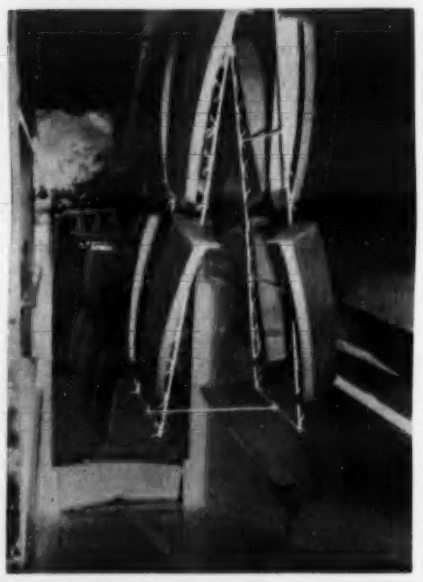
SALES OFFICES: PALO ALTO, CALIF. • CHICAGO, ILL. • CAMDEN, N. J. • NEW YORK, N. Y.

Better, Faster, More Durable Finishing Process Utilized

CHICAGO — The finishing operations on Hotpoint refrigerators in the new plant are distinguished by two things: the use of a single conveyor system, and the application of the final finish by the Ransburg No. 2 Electro-Spray Process.

The single conveyor system means that after the cabinets and accessory parts have been received from another finishing department they are hung on a special hanger which carries them through all operations, such as metal cleaning and phosphatizing, flow coating, baking, sanding and tack wiping, finishing, and inspection. The parts are then transferred to the transport conveyor which takes them to the final assembly line.

The length of the finishing conveyor is 3260 feet, and it is powered by three DC drives. Hangers are on 56-inch centers. The special hanger, designed for re-positioning the work without transfer and handling, carries the cabinet, the outer door, the inner door pan, and the toe plate through the entire operation. To permit proper draining, the cabinet is sent through the metal cleaning and flo-coat operation right side up and tilted slightly.



FLOW COATING OF CABINET SHELL and cabinet parts is an automatic, continuing process, with the parts moving down through the coating apparatus on the regular conveyor line.

After sanding, the cabinet is reversed on the hanger by means of a single lever so that the top of the cabinet is facing down to prevent dirt from settling on the top through the final finish and baking operation.

The metal cleaning and phosphatizing is performed through a 6-stage power washer consisting of an alkali wash, two over-flowing rinses, a phosphatizing bath, a cold water rinse, and a final hot chromic acid rinse.

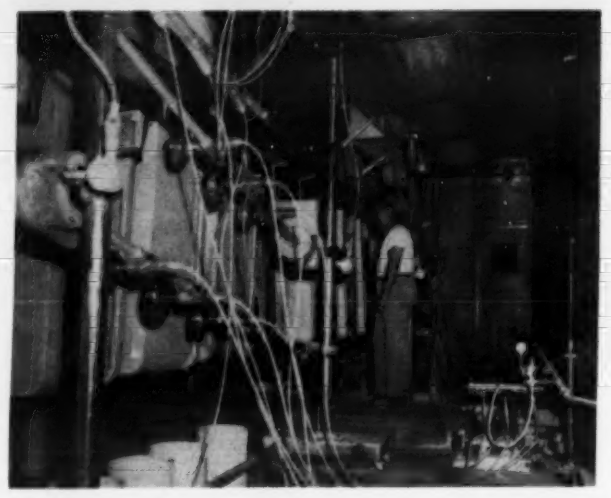
The Epson resign primer coat is applied in a flo-coat applicator, equipped with a vapor chamber.

In the application of the final finish coat, Hotpoint is the first refrigerator manufacturer to use the Ransburg No. 2 Process and also the first to use Ransburg's screw principle grouping conveyor.

To provide clearance on curves and dips through the entire system, hangers are placed on 56-inch centers. However, that creates too wide a gap between the parts as they pass through the Ransburg No. 2 Process. The proper space of 3 to 4 inches is provided through the arrangement referred to as the "grouping conveyor." The loaded hangers automatically transfer to a secondary conveyor, and the parts are brought to the proper distance by a large variable pitch screw.

Ransburg Electro-Coating Corp. describes its set-up for applying finish material as being comprised of two stations, with an automatic indexer in between. The first station is equipped with three triple atomizers on each side of the conveyor for painting opposite sides of the cabinets, making a total of 18 bell-shaped atomizers.

The second station is similarly equipped and also has one triple atomizer unit mounted directly underneath the conveyor for painting the inverted tops of the cabinets, making a total of 21 bells. The side atomizers at the second station paint the inner door (which is mounted on the back of the cabinet) and the large door and toe plate, respectively.



A FINAL FINISH IS GOING ONTO THE CABINETS, BUT TOO FAST FOR EVEN THE CAMERA TO CATCH. In the Ransburg No. 2 electrostatic paint spray system, electrically charged paint particles hurled from the "bells" ranged alongside the special conveyor automatically provide a cabinet finish of perfect constituency.

Cabinets are spaced on 56-inch centers as they approach the first station. The Ransburg bunching conveyor automatically spaces the workholders to 32-inch centers, so that they are very close together as they travel through the first station. Then, space between the cabinets is increased enough to permit turning each workholder 90 degrees in order to present the other surfaces for painting at the second station.

The workholder centers for the second station are 36 inches; and as soon as the work travels through the second station, the space is again increased, and the holders are automatically indexed 90 degrees again so that they are returned to the main conveyor on 56-inch centers and in the same relative position that they were in the beginning.

In the actual coating process, deposition of paint on the work piece is accomplished by electrostatic force. The coating material is supplied to the Ransburg atomizers by fluid pump units of the positive-displacement type.

A source of electrical high potential is connected to the atomizers, creating a strong electrostatic field between them and the moving articles, which are grounded electrically through their hangers to the conveyor.

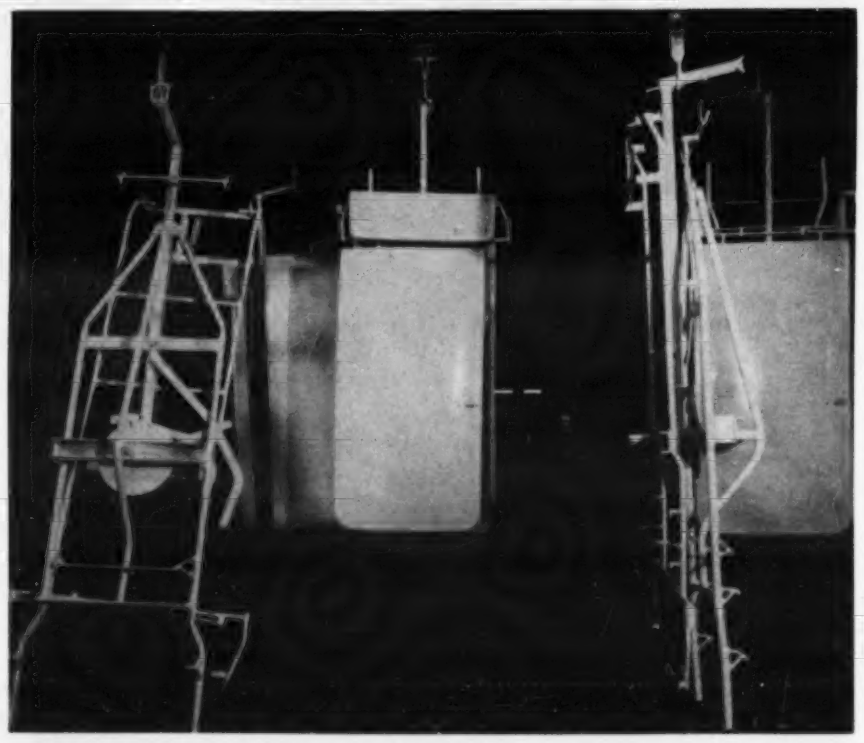
The paint is atomized under the influence of this field into a spray pattern of uniformly fine, charged particles, while the irresistible attraction of the field pulls the spray to the moving particles.

The length of the electrostatic booth is 40 feet. Each group of bells requires 8 feet. The remainder of the booth is used for the automatic transferring, grouping and indexing. As there is no overspray, only enough exhaust is provided to remove the solvent vapors.

The Ransburg No. 2 Process is free from major variables such as atomzing air pressure, fluid delivery rate, spray pattern size and shape, and over spray exhaust air currents. It thus insures a high degree of uniformity and positive duplication of results, eliminating dependence upon the art and skill of the operator.

Savings in paint is the main advantage, the claim being made that on most production lines it will provide from 50 to 100% more pieces per gallon than any other spray finishing system, including Ransburg's No. 1 Process. Other savings are said to be made on labor, and elimination of conventional booths, and a lesser need for ventilating equipment.

MILES OF AUTOMATIC CONVEYOR LINES IN THE NEW HOTPOINT plant are high overhead, thus permitting the travel of component and sub-assemblies throughout the plant with no clutter of production space. Here cabinet shells and doors arrive from the prime coat process to be sanded and "destreaked" before receiving the final coating in the Ransburg No. 2 electrostatic paint spray system.



A HOTPOINT DESIGNED-PATENTED RACK FOR HOLDING at one time the door, cabinet, and base panel for final coating through Ransburg No. 2 electrostatic spraying.

Hotpoint Research Geared To Presenting Proved Appliance

"SLAM" TEST IN HOTPOINT'S REFRIGERATION ENGINEERING SECTION (RES) is made on the door, door shelves, and handles to assure proper construction, design, and materials. More than 400,000 continuous slams are performed on the door shown, equal to about 25 years of normal household use.

CHICAGO—"Research is the subconscious guide that prompts the American consumer to purchase an appliance. To the manufacturer, research is one of the important keys that helps to open the consumer's door to more sales through product acceptance."

With these two guides, Hotpoint Co. has established a refrigerator research section that works with the thought that with the passing of each new year, a new and better appliance must be presented to the homemaker.

The Refrigeration Engineering Section of Hotpoint Co. (RES) is where refrigeration products are designed and developed for production. Here too, is where the "features" on Hotpoint refrigerators, air conditioners, food freezers, and dehumidifiers originate.

In order for RES to perform its functions, a specially arranged building for these operations was needed. Hotpoint engineers not only prepared specifications for the building, but provided information for more than 98% of the equipment used in its operations. This was the only way Hotpoint saw to develop appliances that measure up to its high standards of performance and customer satisfaction.

Ideas, which are designed and developed into workable and usable features for the consumer market, originate from several places. Market research tests for consumer preference are used. Hotpoint field reports, product planning information, and other data are gathered by RES to help in their development work and create new ideas for refrigeration appliances.

When an idea has been found feasible for possible use on an appliance,

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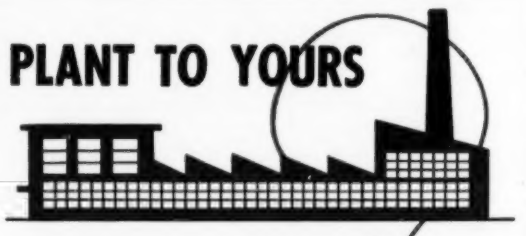
FROM OUR PLANT TO YOURS



Your requirements in aluminum tubing —whether they are in random length coils, straight cut lengths or intricately formed tube patterns to your prints—all pressure tested, of course — and delivered on our trucks to your line when you need them—that's our business.

Miles and miles of tubing

We commend the Hotpoint planners . . . . they have worked a marvel in manufacturing and assembly line efficiency and quality control. We are proud to be considered among their many suppliers.

WE WELCOME YOUR INQUIRIES.

BRAZEWAY CO. - - - Adrian, Mich.

Research Is Key to Improved Product

(Concluded from preceding page)

a design must be made. Not one, but many designs are made and each is given a thorough analysis to determine the best design for ultimate use.

Designing of the various parts which go to make up a refrigerator is the responsibility of three engineering units of the refrigeration section.

One unit is held responsible for the design and development of mechanical parts of the refrigerator; another for the design and development of the cabinets and a third for special refrigeration products.

After a design has been selected, a model must be made. This is done in RES's own model shop. The machine shop uses standard and special equipment for metal, wood, and plastic work. Mechanics, technicians and assemblers are specially trained for model development work.

When a model is finished, it is tested to see if the design is acceptable. The extensive equipment and testing facilities which RES has assures Hotpoint that the designs finally accepted will give the American homemaker the best in refrigeration appliances.

Let's consider a typical case of testing. The visual design section of engineering presents to RES sketches of a newly designed handle for the 1954 model refrigerators. The RES drafting room makes layouts and details the part. A working model is then made and checked. Now the handle looks good, but will it withstand the rigorous use that the consumer will put it through?

The average woman opens and shuts her refrigerator door about 90 times a day. In one year she gives the door handle, as well as the hinges, door, and door shelves a good deal of wear and tear.

To make sure this new door handle will stand the worst conditions of use from the consumer, RES puts it through 400,000 continuous openings and closing of the door. This test "jerks" the door open and slams it shut, instead of operating it gently as the average woman does. If the door handle passes this test, there is little question about it being acceptable for use on a refrigerator.

RES has numerous tools and equipment for testing, each for a specific test purpose. It has three calorimeter test rooms. These rooms, designed by Hotpoint engineers, are used for testing condensers and compressors. The temperature may be adjusted and held anywhere from 70° to 110°.

There are six standard performance test rooms at RES. These rooms range in temperatures from 55° to 110° F. Here the refrigerator is tested with and without load for power consumption, per cent running time, and general operation of the cabinet and freezer. This is a dry test covering a wide range of field temperature conditions.

Examples of field conditions can be seen in the following: 110° F., extreme southern area houses; 70° F. to 90° F. are average home conditions and 55° F. may be found in an unheated hall or back porch. RES has available all ranges of temperature conditions that exist wherever the refrigeration appliance may be sold and used. Here again, all test equipment was designed by Hotpoint engineers. (Food freezers are also tested in these rooms.)

The RES sound and vibration checking room is a room within a room. The inner and outer shells of the room are monolith concrete. There is a variable width air space between the two. The outer room rests on the ground. The inner one is mounted on large doughnut shaped rubber supports. One can actually push the inner back and forth. Sound absorbing materials are used inside to reduce acoustical problems. All refrigeration products are checked here.

One special performance test room is used to test refrigeration products. It has a controlled temperature range from 0° F. to 120° F. Any expected temperature condition can be simulated in this room so the operation can be checked under extremely adverse conditions.

Appliances are studied for sweat patterns by operating them in humidity test rooms. These are of a special design to improve accuracy. Temperatures range from 70° F. to 100° F., with the relative humidity ranging from 70 to 100%.

From the sweat patterns on the exterior of the cabinet, correct insulation design can be determined. The interiors of the refrigerators are also studied to determine if they sweat excessively.

Refrigerators are shipped by rail and motor truck. Methods of trapping and securing the appliance interior parts as well as appliance crate designs are studied on a vibrator table, a Conbur Incline plane and drop test plate. Tests are made to determine the ruggedness of the packaging of the appliances to insure that the appliance reaches the consumer's home undamaged.

To help RES do its job, extensive field reports and test data are made available by Hotpoint's field service section. These reports show the wide range of conditions under which appliances must operate. Over the years, RES has accumulated information which is used to determine the various tests to be made in an effort to duplicate these conditions and obtain data necessary to draw specific conclusions on appliance model performance. This enables RES to predict what will happen when the appliance goes into the consumers home.

SOUND AND VIBRATION TEST ROOM OF THE Engineering Section is a room within a room, the inner room resting on doughnut shaped rubber supports. Instruments such as the oscillograph are used to carefully check sound and vibration characteristics.

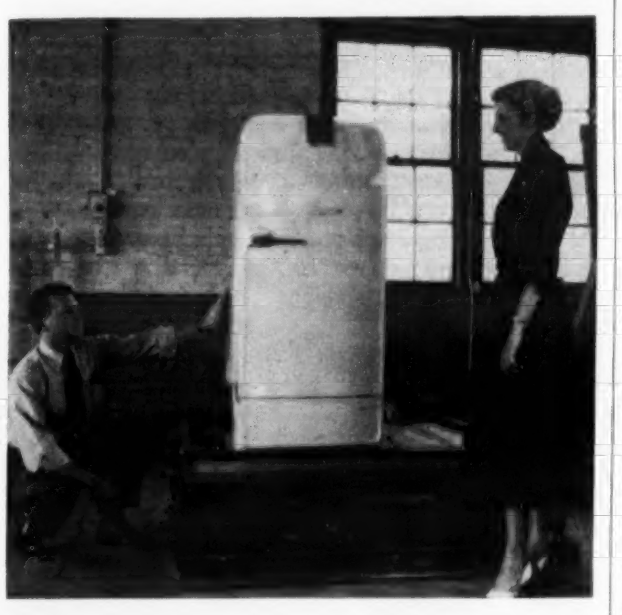
RES has another unit in its overall organizational structure; one which is exceptionally important to the successful manufacturing of refrigerators. This is the process standards unit. It includes the works laboratory, material research and process development laboratory, and the production performance test laboratory.

The works laboratory controls the manufacturing processes used in the refrigerator plant.

The material research and process development laboratory investigates and studies new materials, such as plastics and metals and develops various manufacturing processes.

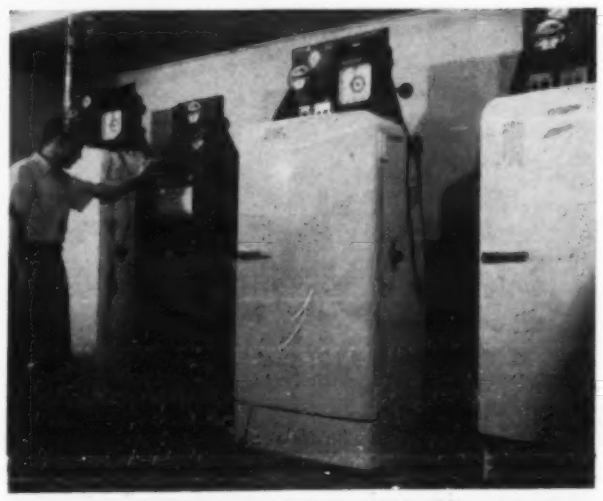
The production performance test laboratory daily takes completed products off the assembly lines and tests them to see if they meet released standards of design and performance.

In summation, Hotpoint's RES actually follows and guides the manufacturing of refrigeration appliances from the original idea to the placing of the crated appliance in the warehouse for shipment to the American homemaker.

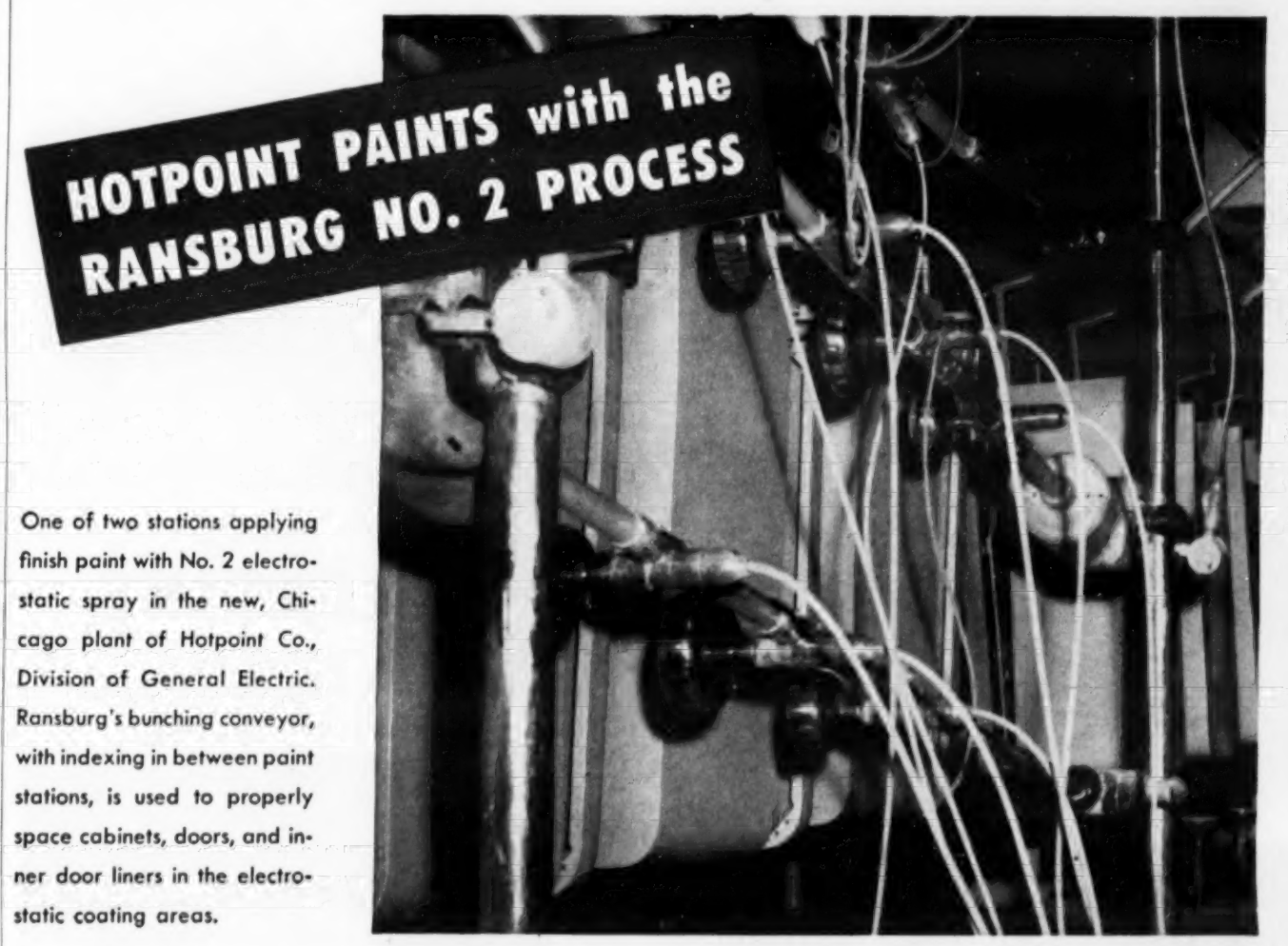


GILDA GRAY NEVER DID A SHIMMY that could compare with the one that this Hotpoint refrigerator is doing for Bob Jablonski and Dorothy Kochan. In this vibration and "bounce" test in the refrigeration engineering section laboratory stock models are bounced and jerked in four directions.

"SMACK" TEST IS WHAT this might be called. More technically, it is an impact and jar test, one of several used to test effectiveness of crating protection for refrigerators in shipment.



IN PERFORMANCE TEST ROOMS, the Hotpoint Engineering Section can duplicate any conditions likely to be found in consumer use of refrigerators. Most usual test setups: 110° F., simulating conditions found in southern area homes; 70 to 90° for the usual average home conditions; 55° which is the condition likely to be found in an unheated hall or back porch.



One of two stations applying finish paint with No. 2 electrostatic spray in the new, Chicago plant of Hotpoint Co., Division of General Electric. Ransburg's bunching conveyor, with indexing in between paint stations, is used to properly space cabinets, doors, and inner door liners in the electrostatic coating areas.

● It's significant that the first completely new refrigerator plant in 20 years chooses the modern way—the RANSBURG NO. 2 PROCESS—to meet the exacting, high quality standards demanded in the finishing of HOTPOINT REFRIGERATORS.

Today, both large and small industrial plants all over the nation—and abroad—are relying upon the Ransburg No. 2 Process to provide higher efficiencies . . . increased production . . . uniform high quality painting at a fraction of former finishing costs.

RANSBURG

Want to know more about the unmatched efficiencies of the Ransburg No. 2 Process? Write for our brochure describing the No. 2 Process in detail and showing numerous, on-the-line examples of varied installations in factory finishing departments.

Ransburg ELECTRO-COATING CORP.
INDIANAPOLIS 7, INDIANA

New Processes Used at Hotpoint To Make Freezer Compartment

(LEFT) EARLY STEP IN EVAPORATOR ASSEMBLY takes place as girls place tubing and brazing strips on aluminum evaporator sheets, in preparation for the trip through the brazing oven.

(RIGHT) BRAZING OF EVAPORATOR TUBING TO THE EVAPORATOR SHEET demands very close control of temperatures. Operator checks brazing furnace control board for any variation in brazing oven temperatures, while in right background assembled tubing and sheets move on conveyor into the oven.

CHICAGO—In fabrication of evaporators for Hotpoint systems, sheets of rolled aluminum are first taken from the storage area and fed into a specially designed machine that straightens, shears, and automatically stacks the sheets. The stacked sheets of aluminum are brought from the shearing machine to three 150-ton presses.

For the first operation, the operator takes the cut aluminum sheet and feeds it into the first press. Here primary pierces are made. He then hands it to the second operator, where flanging is performed. The third operator makes the final pierces and flangings.

From here, the sheet aluminum is placed on a roller which feeds into an automatic washing machine. The washing machine removes all the dirt, oil, or grease from the aluminum sheet. This process is necessary for a good brazing operation.

The aluminum evaporator tubing, already formed in another department, is placed along side the evaporator. Small strips of brazing material are set on the back side of the evaporator and the aluminum tubing is placed upon it. This happens while the rubber matting is moving toward the brazing furnace. The matting moves very slowly so as not to jar or move the brazing strips from the tubing on the evaporator sheet.

The matting moves directly into an electric furnace. This brazing furnace is held at a constant temperature and never varies more than one or two degrees. This is necessary so that the correct time and brazing will result. On leaving the brazing furnace, it is inspected and then put into wire baskets for an acid pickle and water rinse. It is next air dried and again inspected. Then the evaporator is staked on a table ready for the forming operation.

Formation of the evaporator and assembly of the evaporator back into its proper shape is a new operation in the refrigerator industry. It is common in the industry today to make use of several operations to form the evaporator as well as several pieces of equipment. Hotpoint uses one machine to perform the complete operation.

Using the principle of a tangent bender, a specially designed machine by Struther-Wells to incorporate a Resistance welder for the evaporator and back assembly, the resistance welder is laid horizontally across the Struther-Wells machine.

The evaporator back is placed vertically on the machine and the evaporator is placed in a horizontal position. Two heads move upward bringing the evaporator sides around and curl them across the ends. The six welding points move down and weld the ends together. The result is an evaporator with a back assembled in 15 seconds.

Final sizing of the evaporator and crimping of the sides and the back are done on another machines especially designed for Hotpoint. This crimping operation where the evaporator sides and evaporator back side meet is done to give double insurance to the tightness of the evaporator. This machine also expands the entire evaporator so that it is smooth and has no ridges, indentations, or marks before it is finally approved. The evaporator is placed

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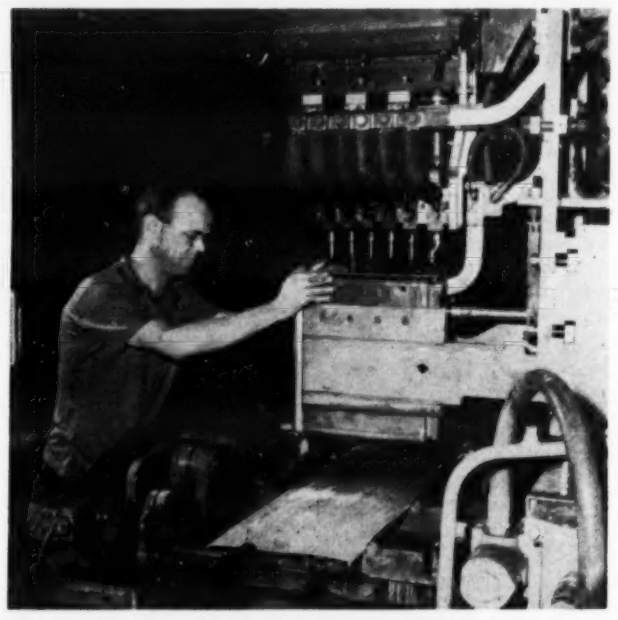
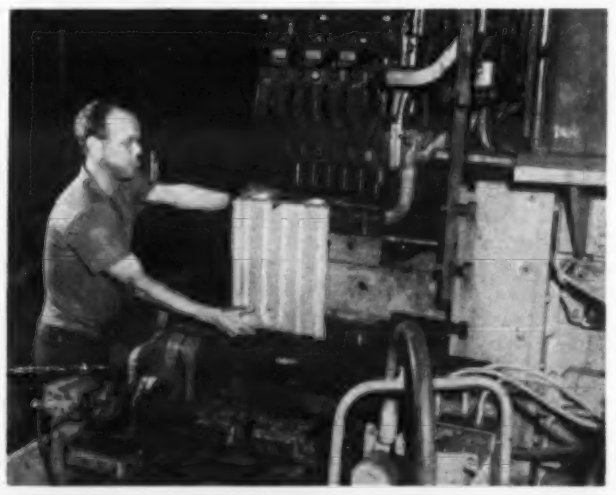
Forming, Welding of Evaporator Accomplished In Single Operation With Specially Designed Machine



FINAL FORMING OF THE EVAPORATOR AND ASSEMBLY of the evaporator back into its proper place is done on set of new machines developed by the Struthers-Wells Co. The machine incorporates a Resistance welder, which is laid horizontally across the tangent bender. Here the operator places the evaporator back in the machine, with the tube and sheet assembly resting on the bed of the tangent bender.

TWO HEADS ARE MOVING UPWARD IN THE EVAPORATOR-FORMING MACHINE bringing the evaporator sides around and curling them across the ends. The welding points move down and weld the ends together.



COMPLETED EVAPORATOR IS REMOVED BY THE WORKER FROM THE SPECIAL FORMING MACHINE. The complete operation from start to finish takes about 15 seconds. Prior to this installation, it was common in the refrigeration industry to use several operations and machines. Hotpoint is the first appliance manufacturer to form evaporators in this manner.

Hotpoint Co.

Clears the Track for Mass Production

with

CLEARING

Backing the Assembly Line

The new Hotpoint refrigerator plant produces enough refrigerators in a single day to gladden the heart of every housewife in an average size town.

In order to keep moving, the assembly lines need a continuous supply of component parts delivered on time to each station.

Hotpoint engineers rely on Clearing presses to give the assembly lines a clear track for production. Presses like the ones shown here turn cold steel into finished stampings, the starting point of a modern marvel of quality production—the Hotpoint refrigerator.

CLEARING PRESSES THE WAY TO EFFICIENT MASS PRODUCTION

CLEARING MACHINE CORPORATION, 6499 West 65th Street, Chicago 38, Illinois · HAMILTON DIVISION, Hamilton, Ohio

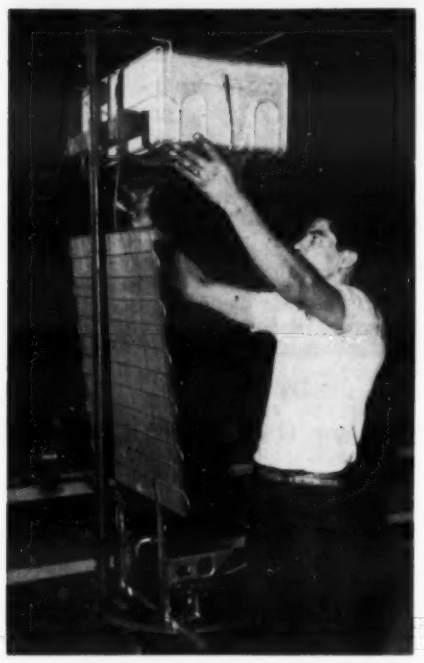
Freezer Fabrication--

(Continued from preceding page)

over the expanding machine. Arbors move outward to expanding the evaporator and at the same time another arbor is rotated around the side of the evaporator, crimping them tightly together.

The welding equipment used in welding the header assembly to the evaporator and the copper-aluminum connector to the evaporator is a new development. It employs advanced argon welding techniques. No manual welding is used. The entire welding process is completely automatic. The process and welding machine was designed and built by Hotpoint engineers.

All completed evaporators are given high pressure leak test, prior to the anodizing process. High pressure air combined with "Freon" is injected into the evaporator. This



WHEN EVAPORATOR ASSEMBLY LINE MEETS the condensing unit assembly line, the evaporator and condensing unit are placed upon a conveyor frame which carries them on to further assembly operations and tests.

pressure remains in the evaporator throughout its entire operation until it is ready for assembly on the refrigerator. The "Freon" is injected with high pressure air to permit the use of a sensitive leak testing detector as the last operation.

A $250,000 automatic anodizing machine designed for Hotpoint by the Meaker Co. is used for the complete anodizing process. After anodizing, the complete evaporator is inspected for anodizing thickness. A Type H leak detector is used, (sensitive to "Freon") to detect any minute leaks that may occur in the tubing or welded joints. This inspection is done in a pressurized room to be certain that no contaminated air influences the leak detector.

The evaporator is now ready for placement on the monoveyer assembly line.

NEVER TOO BUSY

ROBERT C. WEBBER

Robert C. Webber, Pres. Webber Appliance Co., Inc., prominent appliance dealer, Indianapolis, says:

"I look forward to receiving the AIR CONDITIONING & REFRIGERATION NEWS. Regardless of how busy I may be I read the NEWS from cover to cover.

"It is a lot of consolation to know that I can keep abreast of the entire Refrigeration Industry without leaving my office."

"Look twice — it's worth the price!"
AIR CONDITIONING & REFRIGERATION NEWS
The Newspaper of the Industry

'PAP' Reduces Layoffs, Fill 80% of Job Openings

CHICAGO—It's a major management problem to maintain a work force in which fluctuation due to material shortages, changed schedules, or seasonal demands are kept to a minimum. The problem is particularly difficult during a period of expansion, when new facilities are being built, tooled, and put into operation.

W. A. Kissock

The hiring and training of adequate personnel for Hotpoint's new multimillion dollar refrigerator plant, actually posed no great problem. A plan, inaugurated in 1950 by Hotpoint's vice president of industrial relations, William A. Kissock, has proved to be one of the soundest plans in industry today.

The Planned Avancement Program (PAP) of Hotpoint has been one of the major factors resulting in no major lay-offs since its inception. In addition, PAP has helped to fill 80% all the job openings by advancing employes who have qualified by planned training.

Perhaps what is important is that PAP is the answer to the problem of securing personnel for the company's new refrigerator plant.

While the opening of the new refrigerator plant will create some 1280 jobs, 85% of these will come from other Hotpoint plants to fill this need. Fifteen per cent will come from the outside. The creation of jobs will be made in these other plants which will amount to about 60% in various departments.

In essence, the opening of the new plant will create new jobs in the refrigerator plant, plus all other plants as each echelon moves upward in

"PLANNED ADVANCEMENT PROGRAM" is the name Hotpoint gives to a program for upgrading employes and getting them into jobs for which they are fitted.

training. PAP was so designed to give the Hotpoint employes the first chance to change their jobs in a higher category or in preference to what they are presently doing.

PAP works this way. Hotpoint forecasts how many employes will be needed on a quarterly basis. Each quarter a definite production schedule is set. Estimates are based on sales forecasts, future orders, materials allocations, etc. Production schedules are in the form of so many refrigerators. Hotpoint knows what man-hours are needed to manufacture each refrigerator. The number of units to be built times the man-hours needed to build each unit divided by the grand total of working hours in the quarter gives the number of employes needed for that quarter.

Step 2 is the inventorying of employes by a questionnaire and personal interview. Instructions direct the employe to hourly and salaried jobs that are available with Hotpoint. The employe names three preferences. In each case the employe is asked to state why he feels qualified for each.

One important note must be made here. A statement on the form says, "You may make revisions later." This statement alone eliminates the feeling that the worker's future is solely hinged on every word he writes. It encourages workers to tell Hotpoint what they really want to do not what they think will look best to the personnel department.

The information is obtained from the five-page questionnaire as it is tabulated. So useful has this information become that 35% of the employes have skills that are useful at Hotpoint on other jobs than the ones they're now working on.

Arrangements are made so that the employe is interviewed which gives him a chance to talk over his advancement program. It also gives the employe a chance to revise his ideas, and change his preferences and gives management the chance to explain why they have or haven't advanced.

Should the employe's preference not fit in with his past experience, the interviewer tries to work out another plan with him, such as study and training courses. In general, PAP gives every employe as much help and guidance as he wants or needs, and discourages the employe who obviously seeks the unattainable.

Step three concerns the setting up of specific training programs whenever expansion is scheduled or when periodic checks of the skill inventory reveal a short supply of needed skills. PAP keys the number of workers to be trained to estimates of present and future needs.

Training is done only at in-plant courses on company time to the best qualified among those who listed their preferences. Since inception PAP has given 25 such courses lasting from 6 to 40 hours.

Step four involves the advance on a planned basis. The IBM catalog serves as the central requisition system for all departments. An example: Hotpoint needs 25 new set-up men in the press department. IBM sorts all qualified or potentially qualified for this job. The sorting enables Hotpoint to identify those who have had actual set-up experience and those who lack direct experience but have related training. IBM tabs 45 cards.

From this group assume 15 men have direct experience. They are interviewed, verify their background claims, and make sure they want to transfer. Then they go right to work.

Next step is to interview the 30 men in the potential skill class. The main job is to determine just how much on-the-job-training would be needed to qualify these men. Once this is established, the training is planned and the men selected go right into the program. As they reach proficiency, they move from training directly into production.

PAP lets present Hotpoint employes know that no outside hiring will be done until the company has used up all the existing possibilities of advancements from within.

PAP lets "new" employes know that Hotpoint is interested in what they want to do for the company and in what direction their future lies.

Hotpoint Planned Advancement Register

TO: PERSONNEL OFFICE — DATE .....
NAME ..... PAYROLL NO. .....
PRESENT POSITION ..... SUPERVISOR .....
AGE ..... HEIGHT ..... WEIGHT ..... SERVICE .....
CHECK REASON FOR LISTING:
( ) 1. HAVE DEFINITE TRAINING OR JOB EXPERIENCE FOR POSITION LISTED.
( ) 2. WANT TO REGISTER AS "TRAINEE."
( ) 3. DISSATISFIED WITH PRESENT POSITION.
( ) ONLY WANT TO BE CONSIDERED IF NEW POSITION OFFERS BETTER POTENTIAL EARNINGS.
( ) ONLY INTERESTED IF PRESENT EARNINGS ARE MAINTAINED.
( ) INTERESTED REGARDLESS OF RATE.
REMARKS (FOR ANY FURTHER EXPLANATION) .....

EDUCATION:

GRAMMAR SCHOOL	( ) YEARS	COURSE TAKEN OR DEGREE RECEIVED:
HIGH SCHOOL	( ) YEARS	.....
COLLEGE	( ) YEARS	.....
UNIVERSITY	( ) YEARS	.....

OTHER SPECIALIZED EDUCATION: .....

EXPERIENCE:
LIST ANY TYPES OF WORK PERFORMED BY YOU AT HOTPOINT, OR IN OUTSIDE EMPLOYMENT, OR IN SERVICE, OR AS A HOBBY, WHICH MAY ASSIST THE INTERVIEWER IN FORMING OPINIONS OF YOUR QUALIFICATIONS FOR THE POSITION SELECTED.

AMT. OF EXPERIENCE	TYPE OF WORK	AMT. OF EXPERIENCE	TYPE OF WORK
.....	.....	.....	.....
.....	.....	.....	.....

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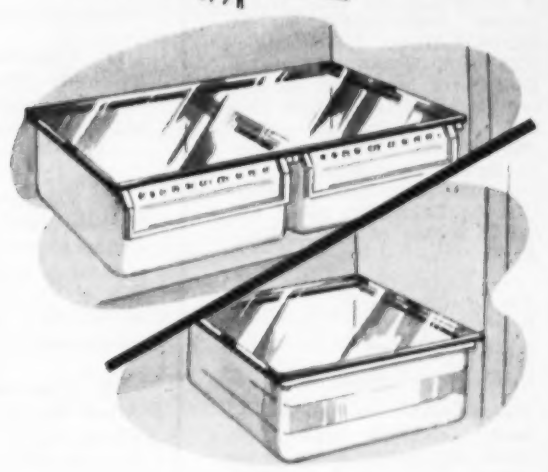
- As in the case of the cold-rolled Stainless Steel glass top Supports and vegetable drawer Slides made and assembled by MOULDINGS DIV. for the beautiful

HOTPOINT REFRIGERATORS

- As a supplier to HOTPOINT, MOULDINGS DIV. happily extends sincere congratulations on the opening of their new plant.



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80 Different Tests Used To Check Materials, Parts, Finished Product

CHICAGO—Some 80 different types of tests are made on materials, components, and completed systems for Hotpoint refrigerators, to assure quality in the finished product.

Nature of these tests is described by H. W. Deuker of Hotpoint's refrigeration engineering department as follows:

THE HOTPOINT REFRIGERATOR TESTS ON MATERIALS, COMPONENTS, AND COMPLETE REFRIGERATING UNITS

1. "Freon"—Acceptance Tests. Before "Freon" is accepted, tests are made to rigid specifications for moisture, non-condensables, etc.

2. "Freon"—Charging Board Tests. The "Freon" is again checked at the unit charging boards for moisture, foreign matter, and accuracy of weighed charge.

3. Refrigerator Oil—Acceptance Tests. Before each tank car is unloaded, 15 different tests are made in accordance with the rigid material specification.

4. Refrigerator Oil — Processing Tests. After additives have been put into the oil and it has been filtered and evacuated, another series of tests are made to assure its high quality.

5. Refrigerator Oil — Charging Board Tests. A third series of tests are made at the oil charging board just before oil is charged into refrigerating units. These include tests for moisture, foreign matter, and accuracy of charge.

6. Prepared Dry Air—At Compression Point. Air for use throughout the plant is dried to a -40° F. dewpoint. A recorder at the air compression point constantly records the the dewpoint of this prepared air.

7. Prepared Dry Air—Tests at Point of Usage. Throughout the plant wherever this prepared air is put into a refrigerating unit component or assembly, visual means of indication of the dryness of the air is provided.

8. Compressors—As Received. During shipment of compressors to Hotpoint, a "holding charge" is held in each compressor. Each one is checked for this charge upon arrival. This constitutes a leak test of each compressor as received.

9. Compressors—Check for Moisture and Foreign Matter. The Laboratory checks each shipment of compressors received for residual moisture and foreign matter which may have been retained.

10. Condenser Steel Tubing. Each shipment of steel tubing for condensers is checked by the Laboratory for residue. The limit is specified in a material specification.

11. Evaporator Tubing and Sheet Assembly. Periodic checks are made on these sub-assemblies for dryness after the processing dehydration operation.

12. Evaporator—First Leak Test. In accordance with Underwriters' Laboratories Specifications, each evaporator is tested for leaks by application of 250 pounds per square inch of dry air and "Freon" while submerged under water.

13. Evaporator—Second Leak Test. After anodizing, each evaporator has all its joints checked for leaks with the Electronic Leak Detector. (This instrument has a sensitivity of 0.004 ounces of "Freon" per year.)

14. Evaporator—Third Leak Test. After anodizing, each evaporator is checked for holding pressure. This constitutes a third leak test.

15. Evaporator—Thickness of Anodizing Film. Each evaporator is checked dielectrically for the thickness of anodized (protective) film. This test is sensitive to one ten thousandth of an inch.

16. Dessicant (Selica Gel)—Acceptance Tests. Each shipment of driers is checked for available moisture capacity by the Laboratory.

17. Evaporator Header Assemblies. All these assemblies are dehydrated with high pressure dry heated air. Each batch is acceptance tested for proper dehydration.

18. Cooling Coil—Restrictor Flow Test.—The restrictors for cooling coils are tested for precision flow by the receiving inspection department.

19. Cooling Coil Dehydration. All cooling coils are dehydrated before assembly. The Laboratory check tests the dehydration operation.

20. Cooling Coil—Assembly Flow Test. When the cooling coil is ready for assembly to the evaporator, a precision flow test is made. Flow meters of one tenth of a cubic foot accuracy are used.

21. Capillary Tubing—Acceptance Tests. Each shipment of capillary tubing is checked for residue and interior wall smoothness by the Works Laboratory. These tests are specified in detail in Material Specifications.

22. Capillary Tubing—Flow Test. Every capillary tube is flow tested to rigid engineering limits designed to fit each model of the Hotpoint refrigerating unit.

23. All Other Diameters of Copper Tubing—Acceptance Tests. The Laboratory must approve each shipment of this tubing for foreign matter content by residue test.

24. Copper Aluminum Connector—Leak Test. Receiving inspection leak tests all copper aluminum connectors for leaks at the welded joint.

25. Copper Aluminum Connector—Bend Test. Receiving inspection tests all copper aluminum connectors by bend testing. This test detects any poorly welded joints.

26. Copper Aluminum Connector—Hydrostatic Test. Periodically copper aluminum connectors are subjected to hydrostatic strength tests by the Laboratory.

27. Evaporator—Hydrostatic Test. Periodically evaporators are subjected to hydrostatic strength tests by the Laboratory.

28. Condensers—Hydrostatic Test. Periodically condensers are subjected to hydrostatic strength tests by the Laboratory.

29. Evaporator Headers—Hydrostatic Test. Periodically evaporator headers are subjected to hydrostatic strength tests by the Laboratory.

30. Heat Exchanger Tubing—Hydrostatic Test. Periodically heat exchanger tubings are subjected to hydrostatic strength tests by the Laboratory.

31. Cooling Coils — Hydrostatic Test. Periodically cooling coils are subjected to hydrostatic strength tests by the Laboratory.

32. Defrost Heater Wire—Acceptance Test. Each shipment of wire to be used for defrost heaters is subjected to rigid acceptance tests in accordance with Material Specifications.

33. Defrost Heater Wire—High Potential Test. When wire is ready for assembly, each one is given a dielectric high potential test.

34. Defrost Heater Wire After Winding. A second high potential test is applied after the wire is wound on a mandril.

35. Defrost Heater Assembly. After wire is assembled into tubing, a third high potential test is applied in accordance with specification requirements.

36. Defrost Heater Assembly—Wattage. After the defrost heater is completely assembled, each one is given a wattage check.

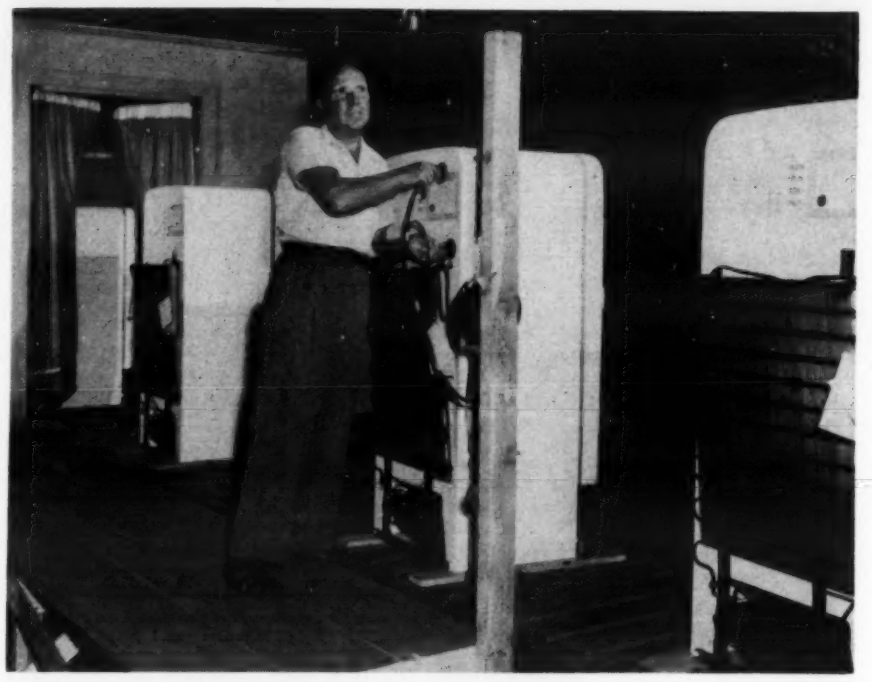
37. Defrost Heater Assembly—Resistance. The completely assembled heater is given a thorough resistance check in air.

38. Defrost Heater Assembly—Resistance. A second resistance check is given each assembly under water.

39. Mullion Heater. Each mullion heater wire is given a resistance test.

40. Mullion Heater. Each mullion heater wire is given a high potential test to assure against any faulty electrical connections.

Cabinet Seal Is Tested On the Assembly Line



AUTOMATIC RECORDING INSTRUMENTS TELL THE OPERATOR ON THE FINAL ASSEMBLY whether or not the door and the door seal are correct under specification set up by the Works Laboratory. In the background, the completed refrigerators are entering the curtained sound chamber room for the final sound and vibration tests, prior to packaging, crating and shipping.

42. Refrigerating Unit Assembly—Flow Test. To assure the absence of any restrictions in the refrigerant system of each unit, it is given a flow test with dry air.

43. Refrigerating Unit Assembly—Leak Test (Submersion). Every unit is charged with 250 lbs. of dry air and submerged under hot filtered water to detect any leaks.

44. Refrigerating Unit Assembly—Air Charge Check. After the submersion leak test, each unit is checked for having 250 lbs. air charge. This constitutes an additional check of the unit for leaks.

45. Refrigeration Unit Assembly—Dehydration. After the dehydration cycle, each unit must have been evacuated to a maximum of 50 microns (1,000 microns is equivalent to 1 millimeter).

46. Refrigerating Unit Assembly—Moisture Check. Units are sent daily to the Works Laboratory where the residual moisture is extracted. This constitutes a precision processing check on the dehydration system.

47. Refrigerating Unit Assembly—Helium Leak Test. As a final leak test before charging, an electronic instrument known as the Mass Spectrometer is connected to each unit. Any leak which exists is quickly detected. This instrument will detect a leak which would require 200 years for an ounce of refrigerant to pass through.

48. Refrigerating Unit Assembly—Halogen Leak Detector Test. After the unit is charged with refrigerant ("Freon") and refrigerator oil, it is subjected to a thorough probing with the electronic Halogen Leak Detector (this instrument has a sensitivity of 0.004 ounces of "Freon" per year).

49. Refrigerating Unit Assembly. To assure starting at low voltages, each unit is given a 95-volt starting test.

50. Refrigerating Unit Assembly. To assure proper relay calibration, each unit is given a 130-volt starting test.

51. Refrigerating Unit Assembly. To protect the customer and comply with Underwriters' Specifications, each unit is given a thorough ground test.

52. Refrigerating Unit Assembly. Each unit is checked for the wattage which is covered by set engineering limits.

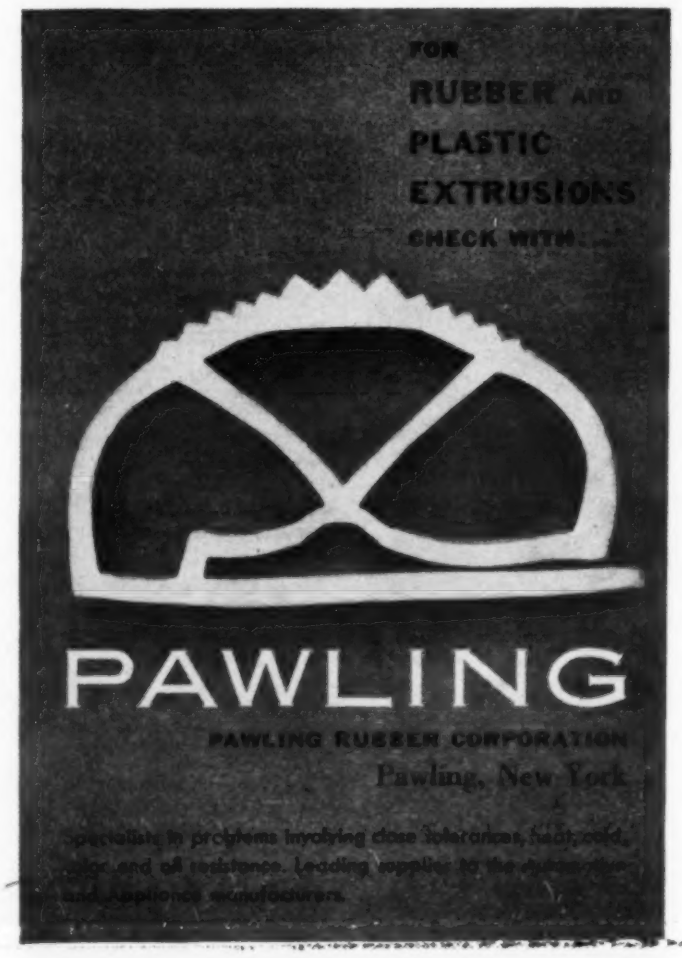
53. Refrigerating Unit Assembly—Frost Line. All units are conveyed through a closely controlled air conditioned room in which refrigeration characteristics are checked against engineering standards.

54. Refrigeration Unit Assembly—Noise Test. To assure silent operation, each unit is checked in a specially constructed soundproof room for any obvious noise.

55. The Complete Refrigerator—Cabinet Shell. To seal out any possible moisture, every cabinet outer shell is completely sealed. The effectiveness of this seal is checked on each one by a specially designed vacuum test.

56. The Complete Refrigerator—Door Pan. The door pan, like the shell, is perfectly sealed and tested.

(Concluded on next page)



Cooling Systems Given Operating Test In a Properly Conditioned Room

COOLING UNITS IN OPERATING TEST TAKE TWO HOURS to pass through air conditioned test room, where constant temperatures and humidities are maintained. Operators check for proper operating characteristics, such as freezing ability and frost lines.

80 Tests Used on Materials, Assemblies

(Concluded from preceding page)

57. The Complete Refrigerator—Door Pan Assembly. After the door has been insulated and sealed, the complete assembly is tested for effectiveness of seal.

58. The Complete Refrigerator. After all of the components of the refrigerator have been assembled, a final sealing test is applied just before each refrigerator is ready to be crated.

59. The Complete Refrigerator—Unit Leak Test. For the fifth time, each unit is finally leak tested, using the electronic Halogen Leak Detector.

60. The Complete Refrigerator—Door Latch. In order that each refrigerator door may close and latch with the proper tension, each one is tested with a specially built "door tension tester."

61. The Complete Refrigerator—Door Gasket. To assure complete sealing around the refrigerator door, the sealing contact of the gasket to the cabinet proper is given a detailed inspection.

62. The Complete Refrigerator—Evaporator Door. Maintaining low temperatures in Hotpoint evaporators is assured by specially designed evaporator doors which seal these components. Each one is given a seal test and inspection.

63. The Complete Refrigerator—High Potential Test. To comply with Underwriters' Specifications, a final high potential of 1,080 volts is applied to each.

64. The Complete Refrigerator—Noise Test. When each refrigerator is ready for crating, it is given a noise test while the unit is running in a specially built soundproof room.

65. The Complete Refrigerator—Wattage Test. While each unit is running to check for noise, it is also checked for wattage.

66. The Complete Refrigerator—Butter Conditioner. All models having the butter conditioner undergo a special test to assure proper butter conditioner temperatures.

67. The Complete Refrigerator—Defrost Control. All models having the defrost feature are subjected to a special test to assure the speed of the Hotpoint Defrost Control.

68. The Complete Refrigerator—Food Compartment Light. On and off tests are made with each refrigerator door closed and open.

69. Cold Control—Acceptance Tests. Each cold control is tested as received to check the accuracy of temperature control at all its positions.

70. Cold Control—Assembly Tests. After each cold control is assembled onto the refrigerator, it is again tested in several positions.

71. Refrigerator Cabinet Paint—Acceptance Tests. Before any paint to be used on Hotpoint refrigerators is accepted, samples undergo multiple tests such as abrasion, humidity, etc.

72. Refrigerator Cabinet Paint—Processing Tests. In order to control the electrostatic spraying process for painting, many panel tests are made each day.

73. Refrigerator Cabinet Paint—Humidity Test. In a humidity room where temperature and humidity can be accurately controlled, completely painted parts are subjected to extreme corrosion testing for abnormally long time periods.

74. Evaporators—Salt Spray Test. The corrosion resistance of the anodized coating on evaporators is checked by subjecting them to an atmosphere with high concentration of salt. The surface must remain perfect after extended time under these conditions.

75. Purchased Parts—With Various Coatings. The coating on purchased parts is subjected to an atmosphere with high concentration of salt. The surface must remain perfect after extended time under this conditions.

76. Complete Refrigerator — Shipping Test. Periodically complete refrigerators ready for shipment in crates are subjected to the regular authorized vibration test, recognized by the American Railway Shipping Standards. This is an accelerated test representing a shipping itinerary extending across the nation.

77. Complete Refrigerator — Shipping Test. Periodically complete refrigerators ready for shipment in crates are subjected to a "hump" test. This facility represents the handling of refrigerators in box cars when they are "humped."

78. Complete Refrigerator — Performance Test. Each day a number of refrigerators ready to be crated are detoured to very accurately controlled temperature test rooms where they are set up just as they will be in the home kitchen. Here complete performance is checked, namely; ice freezing, capacity, current consumption, insulation void test, defrost test, loading test.

79. Complete Refrigerator—Quality Evaluation. Every day a number of refrigerators ready to be crated are subjected to very detailed quality evaluation. This means that the product is quality evaluated in accordance with nationally accepted Quality Control Standards. Mechanical as well as visual checking is used in this evaluation. In other words, everything from the appearance of the total product down to the torque check for the tightness of the smallest screw or bolt is checked.

Veteran Hotpoint Officials Played Key Roles In Setting Up New Plant Facility

CHICAGO—Veteran Hotpoint employes make up most of the key personnel of the basic organization that set up and is operating the new Hotpoint refrigerator plant.

In the engineering department, F. L. Tarleton heads up activities as manager of refrigerator engineering, and H. W. Deuker is the unit head in charge of process standards.

The manufacturing department is under the general direction of B. E. Schroeder, vice president in charge of manufacturing. P. W. Ryan is section manager for refrigerator manufacturing, and H. A. Stutzman is general superintendent of the entire refrigerator plant operation.

A. R. Sowle is superintendent of the unit and final assembly plant, and S. Sayban is superintendent of the cabinet fabrication plant. Chief process engineer for refrigerator manufacturing is R. DeAmicis. Manager of manufacturing engineering is G. T. Broucek, and F. C. Coseglia is assistant manager.

The works engineering sections is headed up by E. M. Shaw as manager, with G. H. Lenartson assistant manager, J. R. Philip and A. F. Neeb are works engineers.

H. H. Charshan is manager of production control for refrigeration products, and C. B. Vesely, assistant manager of the time study section, heads up time study operations in the refrigerator plant. Plant layout section work is under the direction of W. C. Layman, staff assistant to Vice President Schroeder.

Administration department activities have been headed up by W. G. McNeal and L. G. Rappoli. A. G. Hubbard, patent counsel, attends to legal and patent department activities that are pertinent to the refrigerator plant operation.

In purchasing, P. E. Kindig is manager of purchasing for the refrigerator department, and J. E. Hanson is buyer of capital equipment.

'How To Make Your Own Slide Film Presentations'

ST. PAUL, Minn.—A 20-page illustrated booklet entitled "How to Make Your Own Slide Film Presentations for Less than $20" is being offered by the Minnesota Mining & Mfg. Co. here.

The booklet points out that effective presentations using magnetic tape and 35 mm. slides help get ideas across to salesmen and employes and, in many cases, can be produced without professional help.

Five steps required to produce a sound-slide film are outlined. They are: make a picture script, take pictures, organize slide sequence, arrange recording session, and tape-record the commentary.

Additional tips and important details about each step are included in the booklet. It also contains a list of equipment needed, a word about costs, and advice on additional expenditures for items such as sound effects and title cards.

Booklet Gives Histories of 13 Merchandising Displays

NEW YORK CITY—Point-of-purchase pointers on display merchandising are demonstrated in 13 case histories compiled in a booklet "Why people buy . . ."

Prepared by Wm. Melish Harris Associates, counselors on and producers of merchandising displays, the 20-page illustrated booklet demonstrates the principles behind the planning of 13 specific displays for a wide variety of products.

Products and companies represented include Bates fabrics, Borden's ice cream, Dumont television, Ford Motor cars, Frigidaire, Hoover vacuum cleaners, Lamson nuts and bolts, Minute Maid concentrates, Pepsi-Cola, Pyrex housewares, Puerto Rican Rum Institute, Rival household appliances, and Textron Indian Head fabrics.

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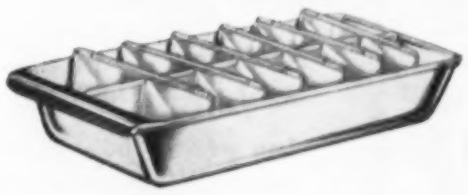
When Mrs. Consumer is at the point of buying, she's swayed toward a Hotpoint appliance by such kitchen-tested features as the Thrift Cooker, the useful drip trough, the handy light reflector—all made by ALUMODE.

Sales of millions of refrigerators of many makes have been aided by the bright, slick, non-stick ALUMODE ice cube trays. Sales of millions of home appliances of many kinds are being helped by the richness and endurance of ALUMODE plain or colored anodizing, with or without chemical brightening, and by the skill and special tooling of ALUMODE.



Add our 40 years of aluminum stamping experience to your own appliance know-how! Get in touch with Aluminum Specialty Company for aluminum parts that really help you sell!

ALUMINUM SPECIALTY CO. *Manitowoc, Wisc.*

In New York: 200 Fifth Ave. Building • In Chicago: Merchandise Mart.

Hotpoint Dealers To Get Mixed Carloads With New Traffic Dept. Arrangement

CHICAGO—Hotpoint's Traffic Section is organized on a functional basis on the principle that the consolidation of related functions results in maximum efficiency. The over-all function is transportation; the detailed functions are receiving, shipping, warehousing, freight car and truck loading, interplant material movement, and traffic.

The word "traffic" embraces all dealings with the transportation industry, namely, the railroads, motor carriers, steamship companies, and air lines. The traffic function may be described as the core of the Traffic Section, the other functions being the outer layers of the section's responsibilities.

The organization chart of the Traffic Section reflects the special problems of Hotpoint, particularly the dispersal of its plants. Three of the plants are at such a distance from the central group that separate traffic offices have been established in them under decentralized control with the Traffic Section serving them in an advisory capacity, thereby securing the benefits of on-the-spot decisions without sacrifice of technical know-how. John G. Borson heads the Traffic Section as traffic manager.

Receiving Unit

The Receiving Unit has two major responsibilities; rapid handling of incoming material to support the company's policy of minimum stock levels of production materials and, second, accurate, speedy dissemination of information on receipts.

A receiving record is prepared for each shipment and is checked against the corresponding purchase order and the shipper's packing list. Copies of the receiving record serve to identify the material while in stock, as a basis for statistical reports and to accomplish the prompt payment of vendors' invoices and the securing of trade discounts.

In addition to the receiving record for each shipment, a daily summary report is prepared on a duplicating master, one line for each receiving record, and numerous copies are distributed to enable the buyers and inventory control personnel to have immediate information relative to critically short items.

The clerical work of the Receiving Unit is under centralized control so that clerks may be moved readily from one plant to another to handle peak loads and so that uniformity of procedure is insured.

While it is not the responsibility of the Receiving Unit to move incoming material to stock points on the production line, it must segregate it on the receiving docks so that those responsible can readily identify it and pick it up on electric trucks. The work of the trucks is speeded by placing the material on pallets, eliminating hand loading of the trucks.

The Receiving Unit inspects the material for visible damage, reporting it, together with missing items listed on the vendor's packing list, to the Traffic Unit for initiation of loss and damage claims against the vendor or the carrier.

The company maintains a fleet of tractors and trailers whose primary function is to move the large volume of parts manufactured at various plants for assembly on the production lines of other plants. Special quick-change connections are used to speed up the disconnecting of a tractor from a trailer which it has just brought into a dock so that it can move out immediately with another. The tractors must be powerful as they receive their greatest abuse not on the road but in moving in and out of the inclined dock pits with their heavy loads.

Operating conditions are such as to make it more economical to own equipment than to rent it or to use contract carriers. However, rented equipment and contract carriers are utilized during peak periods to minimize the trucking investment and to avoid the idle driver time which would occur at times if the fleet were increased.

Responsibility for equipment selection and maintenance is in the hands of an automotive expert, who maintains detailed expense analyses. The operation of the equipment is controlled by a dispatcher, who insures that trailers are fully and safely loaded and that priority is given to urgent movements.

Shipping Unit

The Shipping Unit has the twofold responsibility of warehousing completed products and loading them on outgoing freight cars and trucks. It also handles all miscellaneous shipments, such as express, parcel post, and air freight.

The company's warehousing operations are built around the refrigerator plant. The main warehouse of the company is situated in that plant, thereby avoiding problems which would otherwise be present due to the quantity and bulk of the refrigerators.

In terms of quantity and bulk, the item next in importance is the electric range. The range plant is across the street from the refrigerator plant and feeds its production into the warehouse in the refrigerator plant by means of a conveyor crossing the street at the second floor level.

Central Warehouse

The principal advantage of a central warehouse for these two plants is minimum material handling expense, not only in warehouse labor but also in the final step of transferring the products from the warehouse to freight cars and trucks, the same personnel handling the warehousing and carloading of both products.

The central warehouse is divided into bays, each served by an overhead crane 100 ft. long. These cranes stack the products to a height of 25 ft. and occasionally 29 ft., without the use of pallets. The refrigerator and range assembly conveyors converge onto a single master conveyor in the warehouse, from which one man shunts each item into the proper bay by means of an electrical control system.

The cranes pick up the items from the local conveyors in the bays and place them in stacks. Each bay has two local conveyors; enabling them to receive products faster than the cranes can stack them. They serve as automatic feeders from the bay to the car siding at the time the crane removes products from the warehouse stacks for shipment, and also enable newly-produced products required for immediate shipment to be transferred from the assembly lines directly to freight cars.

Instead of stacking a product entirely in a single bay, it is stacked in several bays to reduce the distance from the warehouse floor to the various freight cars.

The railroad siding inside the central warehouse contains three tracks, each of which holds 13 cars. These tracks lie across the front of the bays on the side opposite to the master conveyor. Products are transported through the cars on the two nearest tracks to load the farthest track first, thus avoiding going around the end of the tracks. This permits replacing loaded cars with empty cars on at least two tracks at any time without interfering with the loading operation.

Handling Customers' Order

The clerical operation of the Shipping Unit involves a perpetual daily inventory of the warehouse. However, its most complex task is the coordinating of customers' orders as received for the Order Service Unit. After the receipt of the initial order for a shipment to a customer, to which the Order Service Unit assigns a shipping date, changes are made due either to the customer's request or unavailability of all the items on the order.

Specialists provide this coordination; they work closely with the production scheduling personnel to insure immediate manufacture of items for which orders are on hand when warehouse stocks are low; they also work closely with the car loading and truck loading groups to insure that urgent orders are given priority.

On the warehouse floor close coordination is provided between the warehouse personnel and those engaged in car loading. Control is provided by a packing list prepared from the customer's order, which is then used as the basis for the preparation of the bill of lading and attached to the load as identification.

The bill of lading is taken into the Traffic Unit for insertion of the routing, which indicates which rail-

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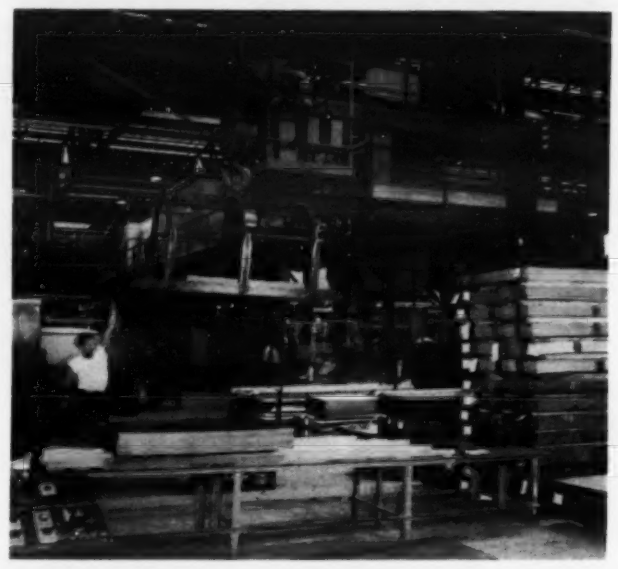
Overhead Cranes 'Carry the Load' In New Plant



MATERIAL HANDLING IN REFRIGERATOR PLANTS is done in great part with overhead cranes, whose capacity and mobility help to keep materials always well in supply.

Refrigerant, Oil Storage Permits Fast Handling

OIL AND REFRIGERANT STORAGE AREA is of such size as to assure continuity of operations. Engineer at right is at control board for pumps that "pulsafeed" refrigerant to the charging boards.

Helping to make fun of washday

Best day of the week? Washday, of course! Just ask any housewife who is lucky enough to have an automatic washer around the house.

Building these work-saving units so they will operate under many varied conditions is no simple task.
Not only must manufacturers be sure of their design, they must also be sure of the materials they specify to do the job.

For example, when Hotpoint engineers developed a "fluid-drive" clutch assembly for their automatic washer, they found it necessary to join together a clutch face and an aluminum die casting.
They called on 3M to tackle this bonding problem.
3M solved it with EC-1099—a fast-drying adhesive, noted for its high strength and its high resistance to oil and fuels.

See what adhesives can do for you...
Joining dissimilar materials is but one of many jobs 3M adhesives can do for you. For the complete story, contact your 3M sales representative. Or, write for free booklet to 3M, Dept. 240, 417 Piquette Ave., Detroit 2, Mich.

see our catalog in PRODUCT DESIGN FILE or write for copy

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MAKERS OF "SCOTCH" BRAND PRESSURE-SENSITIVE ADHESIVE TAPES • "SCOTCH" BRAND SOUND RECORDING TAPE • "SCOTCHLITE" BRAND REFLECTIVE MATERIALS • "3M" ABRASIVE PAPER AND CLOTH • "3M" ADHESIVES AND COATINGS • "3M" ROOFING GRANULES • "3M" CHEMICALS

'Up They Go' As Hotpoint 1954 Refrigerators Are Stacked Awaiting Shipment to the Field

OVERHEAD CRANES IN THE SIX HIGH BAYS IN THE STORAGE AND LOADING AREA of the warehouse section of the new plant, make handling of ranges and refrigerators for stacking, handling, loading processes, swift, safe, and damage proof. Such new traffic techniques assure dealers of receiving undamaged products throughout the United States.

Carloading Procedure Part of Traffic Unit Operations

(Concluded from preceding page)

road, or truck line, will handle the shipment, and via which routes.

A copy of the bill of lading is handed to the carrier as his authority to make the shipment and another is mailed to the customer to warn him of its impending arrival so that he can make unloading preparations.

A copy of the packing list is handed to the Billing Unit, which is purposely situated adjacent to the warehouse office so that invoices can immediately be prepared and mailed to customers.

Traffic Unit

In the cases where the company pays for incoming and outgoing transportation, the freight bills are paid by the Accounts Payable Unit upon receipt and then forwarded to the Traffic Unit, which audits them and, when necessary, initiates overcharge claims against the carriers. These claims are considerable due to the complexity of the nation's transportation structure, despite the carriers' use of transportation cost experts, called rate clerks.

The computation of transportation charges is the most complicated task in this nation's price structure. The description of an article determines its transportation classification; after that is determined, and it is not a simple matter, routings must be selected because the carriers' rates often vary with the routing as well as with incidental services furnished by the carrier. At this point we are concerned with routing from a cost viewpoint, whereas above, in discussing bills of lading, the consideration was not only cost but also time in transit.

In addition to determining routings on outgoing products, the Traffic Unit prescribes the routing on incoming materials, considering cost, time in transit and the necessity for knowing at all times where a freight car or truck is so that, if the load is urgently needed to keep a production line going, the Traffic Unit can trace and expedite its movement.

In addition to handling all freight movements, the Traffic Unit obtains passenger reservations for company personnel by rail and air.

A major activity of the Traffic Unit is the continual study of the nation's transportation system for the purpose of keeping abreast of changes and to enable the company to intercede on its own behalf when contemplated changes appear to be disadvantageous to it. The carriers may increase their prices or eliminate services which the company requires.

The Traffic Unit therefore maintains close liaison with the carriers to insure that the latter will not make changes without considering the company's requirements for efficient transportation service at reasonable prices.

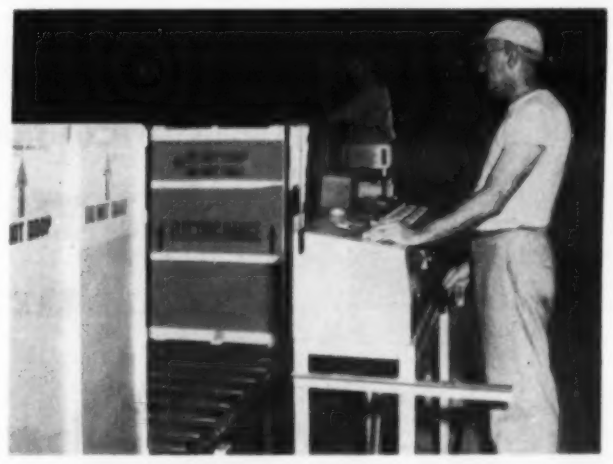
Because the carriers are in the status of semi-public utilities under strict government supervision through the agency of the Interstate Commerce Commission, which sometimes makes changes in the national transportation system on its own initiative, the Traffic Unit must maintain contact with that agency and at times appear before it to plead its own case.

Because of the mutual interest of manufacturers of similar products in the transportation charges of those products, the company's traffic manager is a member of the Traffic Committees of the American Home Laundry Manufacturers' Association and the National Electrical Manufacturers' Association, and during the last three years has been the chairman of both committees.

* * *

'Switchman' Controls Meeting of Different Product Conveyor Lines to Facilitate Mixed Shipments

SWITCH BARS AT POINT WHERE REFRIGERATOR AND RANGE LINES converge in storage area is shown here. By pushing buttons, operator can get any combinations desired for loading.



AS CONVEYER LINES FROM THE REFRIGERATOR AND RANGE PLANTS come into the storage and loading area, a "switchman" controls the order in which they arrive, and where they go. This facilitates rapid handling in the area, and also makes possible the loading of mixed cars of major appliances for

Air Conditioning, the Business that has *tripled* in three years

Air Conditioning is an explosive business. The existing market is big—the potential *tremendous!* Less than 2% of the prospects have been sold!

Action is fast. Air conditioning sales for 1953 are expected to show a gain of $400,000,000 over 1952. Sale of room coolers which reached 341,000 last year will top the 800,000 mark this year.

Year-round residential air conditioning installations have shot from 20,000 last year to nearly 80,000 this year!

Air conditioning is the rapidly expanding new frontier in American business! And the way is open for businessmen who seek new markets—greater profits.

You can earn more in air conditioning when you reach the men who buy. Tell your sales story to the men of decision, manufacturers, distributors, and dealers—the men who subscribe to AIR CONDITIONING & REFRIGERATION NEWS. Advertise in the newspaper of the industry which carries more advertising—more news—than any two of its competitors combined.

You can learn more about air conditioning when you subscribe to AIR CONDITIONING & REFRIGERATION NEWS. Keep up to date with 52 issues of the NEWS—only $5.00 a year!

Use the coupon below to learn more about the NEWS—and to enter your subscription.

Air Conditioning & Refrigeration News
450 W. Fort Street
Detroit 26, Michigan

☐ I would like to learn more about advertising in the NEWS.
☐ I want to subscribe to the NEWS.
☐ 1 year at $5.00 ☐ 2years, $8.00
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City.....Zone...State.....
☐ Check enclosed ☐ Please bill me

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SEE THESE BOOKS 10 DAYS FREE!

One Foot In the Door
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You will *laugh—learn—profit* with this best-selling book for businessmen. 400 entertaining, laugh-provoking pages. Immensely enjoyable, as thousands of readers will testify!

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It's A Great Life
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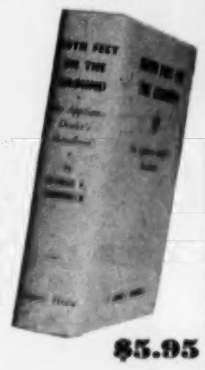
Here's a book with a formula for *selling your salesmen on selling*—as a career and as work that's *fun!* From years of personal experience and close friendship with top-drawer salesmen, Taubeneck's famous book draws a wealth of clever *how-to-do-it* case histories.

$2.50

Both Feet On the Ground
by Geo. F. Taubeneck

Here—*under one cover*—is a book with tested ideas on *every phase* of retail merchandising. 638 pages with 1,000 ideas. Start *now* to step up sales and profits.



$5.95

TEAR OUT AND MAIL TODAY!

Conjure House — 10 DAYS FREE
450 W. Fort Street — EXAMINATION!
Detroit 26, Mich.

Please send me the following books. It is understood if I'm not completely satisfied, I can return the books within 10 days, or I will remit for books plus a few cents postage.

☐ ONE FOOT IN THE DOOR.....$3.00
☐ IT'S A GREAT LIFE $2.50
☐ BOTH FEET ON THE GROUND $5.95

Name .....
Firm .....
Address .....
City..... *Zone*.... *State*.....

Sent postpaid if remittance accompanies order. Same 10-day guarantee.

10-19-53

Hotpoint Engineers Continue Probe on 'Death Trap' Problem

CHICAGO—Engineers at Hotpoint Co. have been doing extensive experimental work in the past several years in an attempt to find a foolproof solution to the problem of children locking themselves in refrigerators and food freezers.

A spokesman for the company said that the problem has caused great concern in the minds of Hotpoint management, and the engineers were instructed to immediately begin work on a solution that would benefit both the public and the refrigeration manufacturing industry.

However, it was pointed out by spokesmen that with the Hotpoint refrigerator with the three or four door shelves, cabinet shelves, top freezer compartment, and other features which occupy space, it would present a difficult problem for a child to overcome in an attempt to lock himself into the refrigerator.

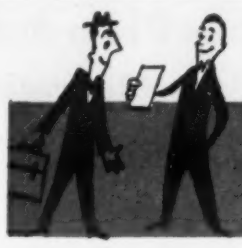
New Adv. Approach Stresses 'Utility'

CHICAGO — A new advertising campaign in *New Yorker, Time,* and *Holiday* magazines using the "utility" approach to stimulate the sales of the automatic electric dishwasher has been announced by Hotpoint Co.

This is the first time in the appliance field that a major manufacturer has attempted to advertise the dishwasher in leading consumer magazines using the "utility" approach instead of the appliance feature approach in selling dishwashers to the public.

"The appliance business has been trying to 'out-feature the features' on low saturation appliances with only fair results," Gordon G. Hurt, Hotpoint advertising manager said.

"The same features story has been told over and over again on various appliances. This new campaign will play down features of the Hotpoint dishwasher. It will play up the utility value of the appliance," he added.



TELLING and *SELLING*

A guide to smart advertising and merchandising practices.

This series of articles comprising ideas and principles for the small retail or manufacturing business is written by James D. Woolf, who was for more than 20 years a vice president and director of J. Walter Thompson Co., one of the largest advertising agencies.

By James D. Woolf

Can't Make a Purse Out Of a Sow's Ear

A recent survey stated:

"Of the vast number of new products introduced each year, 98% fail to produce a profit." This estimate is possibly based on U. S. Government statistics; in any event, I do not doubt its approximate accuracy.

I do not know, of course, how many of these new products—for the year, say, of 1952—involved the use of advertising in their promotion, but I am sure that a lot of them did. Of those many that did, I do not believe that the primary reason for failure was poor advertising.

More probably, in a very large number of cases, the reason for failure was the product itself.

Every year I receive scores of letters from ambitious entrepreneurs who have invented a new product (or bought the patent rights from a needy inventor) which they believe will make them rich.

Nearly all of these letters reveal an almost childish faith in the magic power of advertising.

A few weeks ago, for example, I got a letter from an orchestra leader who had invented an on-again-off-again handle for cans of paint. The idea was the householder, occupied, say, with painting the woodwork in his kitchen, could grasp the can with the trick handle and carry it (the can) around the room without smearing his hands with paint. He sent me one of his handles and asked me to try it. I found that it worked well enough, but somehow or other I still managed to get a lot of paint on my hands. His gadget was a fairly complicated contraption, and it could not have been sold at retail for less than the impossible price of $3.

I advised the musician to forget the whole thing. I told him that I did not believe there was a burning need among householders for his invention, and that at best the demand would be very moderate.

"But advertising can perform miracles," he protested in his reply. "Do you know that people laughed at Gillette's crazy safety razor when he introduced it 50 years ago?" What has happened since I do not know, for there our correspondence ended. But if this orchestra leader goes ahead with his dream of riches, I predict he will be numbered among the misguided 98% in 1953.

Many people, including a host of inexperienced businessmen, do not grasp the limitations of advertising. *Superior advertising does not create successful products.* In a very real sense, just the reverse is true: *Superior products create successful advertising.*

It was not advertising, fundamentally, that made a Midas fortune for King C. Gillette. He invented a device that the world needed—and in time the world beat a path through the woods to his door.

A great advertising authority, the late Albert Lasker, once said a very true thing: *"The product that cannot succeed without advertising cannot succeed with it."* This advice applies with equal force to a store or any sort of service establishment.

What makes advertising yield profits, when it does yield profits, is *the repeat sale.* I have no figures to prove it, of course, but it may have cost as much as a dollar a box for each *first* customer when Wheaties was introduced twenty years ago. But in all the years since then those same first customers have bought Wheaties again and again.

We often hear it said of some man or other that he is "sales-minded." Well, that's a good thing or it isn't a good thing—depending on what is meant by *sales-minded.* If it means that the guy is so "clever" he can sell straw hats to Eskimos, I don't want any part of him. If, on the other hand, it means that he is *product-minded,* as well as sales-minded, I am for him.

The man who is *product-minded* knows that it is the *superior* product that makes successful advertising possible. Unlike the orchestra leader, he knows that advertising cannot perform miracles for products that serve no real needs.

So look first to your product—or your service, or your store, or whatever it is that you hope to sell with profit—before you start thinking about advertising.

If you haven't got something that is *good*—REAL GOOD—my advice to you is that you invest your money in technology, or whatever it takes, to get for yourself something that is *good*—REAL GOOD.

Advertising, with its right hand in a sling, cannot keep you out of that 98% who fail each year to produce a profit. Advertising cannot make silk purses out of sows' ears.

DON'T KILL A CHILD!

Detroit News Photo

Wanda Wells points to death trap that killed 6-year-old Michael Freeman (r.) in Detroit.

Michael Freeman was killed at play, when he crawled into an unused refrigerator stored on a back porch. The door swung shut and Michael was found suffocated three hours later.

Detroit News Photo

BEFORE you put an old refrigerator outdoors

REMOVE

- **Doors**
- **Latches**
- **Hinges**

When storing refrigerator inside

- **Seal It Closed**
- **Turn Door to Wall**

Destroy Junkers—Don't Abandon Them!

•

Air Conditioning & Refrigeration News, 450 West Fort Street, Detroit 26, Michigan

Air Conditioning Fan Motors--

(Concluded from Page 12, Column 5)

"3. Motors equipped with maximum tolerance overloads must trip before winding temperature of 257° F. (or manufacturers' warranted safe allowable) is reached either under running overload or on locked rotor in a 50° F. ambient.

"4. At full load:

"a. Efficiency must be 65% or above.

"b. Power factor must be 68% or above.

Tests for Shaded Pole Motors

"Regarding the shaded pole motor line, the requirements can best be defined by the tests to which these are subjected prior to consideration of their use. These are as follows, given in the approximate order of use:

"1. A voltage/speed curve is taken running free and carrying normal fan load, installed in unit. Within ± 10% of rated voltage a flat speed curve is expected within ± 5%. A 'knee' in the speed/voltage curve is then checked and must occur between -10 and -20% of nominal voltage but no sharp break is allowable.

"2. As a check of winding characteristics and the ability to withstand surges, twice nominal voltage is impressed for one minute.

"3. As a check of winding insulation, the motor is then given a megger test and high potential test of 900 volts for one minute (gradual increase).

"4. If the motor is being tested for condenser fan service, it is then run for 72 hours in an enclosure at 95° F. dry bulb—95% relative humidity, cycling ½ hour on, ½ hour off. At the end of this run, megger and hi-pot tests are given.

"5. Frequently the motors are removed from this humid atmosphere and plunged, idle, into an 0° F. atmosphere for ½ hour after which the motor is meggered and hi-potted.

"6. Again, if for condenser fan service, a rain test is applied whereby the motors are run for 7 days, cycling ½ hour on, ½ hour off with fog nozzles spraying moisture directly on the motors. These are then given megger and hi-pot tests.

"7. A dust test is given next by running the motor for 7 days, cycling ½ hour on, ½ hour off in a closed space amply loaded with filter dust which is kept constantly in motion by air injection. After this test, the motors are checked for free running.

"8. A continuous stalled test is then given for seven days under sustained locked rotor conditions in a 40° F. ambient. This requirement is brought about by the probability of the condenser fan slinger ring being frozen in place during winter weather conditions.

"9. If the motors have survived thus far, they are then placed on life test at 140° F., normal humidity for 2,000 hours cycling ½ hour on, ½ hour off with and without fans.

"Observations are made regarding lubrication, scoring, oil retention, overload performance, quietness of operation, etc.

"10. By now final tests are all that remain. The sound performance of the motor is evaluated under normal and maximum loads at ± 10% nominal voltages. Overload performance is evaluated and conformance to Underwriters' requirements as regards maximum winding temperatures rechecked.

"Before leaving the subject of electrical design, there are one or two points where added emphasis is required," Irwin said.

Sound Level of Motor

"One of the most important of these is the sound level of the motors used for air moving service due to electrical causes. This magnetic sound energy is invariably amplified by the air motion and hence particular care must be taken to avoid loose lamination, windings, etc., in addition to providing a mounting that will absorb as much of this energy as possible. Likewise, air gap eccentricity or rotor eccentricity give rise to a pulsing type of sound energy that is almost impossible to obscure.

Safety Requirements

"Another very important requirement for these motors is that they must comply fully with Underwriters standard 207A, for air conditioning and refrigerating equipment as regards inherent protection, electrical insulation, types of supply conductors used, high potential testing, etc. In connection with high potential testing a serious problem exists.

"Requirement UL 207A states that motors under ½ hp. shall be high potential tested at 900 volts for one minute which motors over ½ hp. shall be tested at twice operating voltage +1,000 volts for one minute or 1,440 volts, for a 220-volt motor.

"When testing individual motors the answer is simple, but what is to be done at final unit high potential test where a 35 milli-hp. fan motor is permanently wired into the same circuit as a 1-hp. compressor motor. Rulings have been received that motor failures under this condition do not constitute rejection of the unit should it occur on UL test but it certainly is a reject as concerns shipping the unit to a user. It can only go as far as the repair station.

"It is likewise felt that no production line can support the physical space or labor required cost to high potential test for one full minute. This is a problem on which clarification and assistance are needed from both Underwriters and motor suppliers.

"We have covered somewhat hastily the problems an air conditioning product designer must face in the application of shaded pole motors, split phase, and capacitor start blower duty motors into the various types of equipment being developed.

"Other types of motors can and have been used, but economic elements together with the excellent progress that has been made in these particular fields of motor design and manufacture have, at least for the moment, directed our efforts along toward the more broad use of these types.

7 Prime Factors Listed

"By way of final emphasis, it is to be remembered that the following elements are of prime importance in the application of motors to air moving duty:

"1. Quietness of operation.

"2. Permanent lubrication.

"3. Universality in mounting arrangements and accessories.

"4. Speed regulation.

"5. Atmospheric protection.

"6. Dependability and reliability.

"7. Low cost.

"An important part of the progress which has been made in air conditioning unit design in the direction of lower operating sound levels, more compact unit arrangement, simplified wiring and control arrangmenents, lower inrush currents, etc., has been due to the continued interest and cooperation of the electric motor industry. We solicit the continuation of that spirit as new problems unfold," Irwin concluded.

The question raised by Irwin regarding the high potential tests brought forth one explanation that "they were started when most insulation on motor windings was cloth or thread."

It was generally agreed at the conference that repeated tests at high voltage not only were not necessary but perhaps harmful in that they might shorten the life of the motor by breaking down the insulation.

T. E. Carville of Westinghouse, for example, commented, "Underwriters subjects a motor to the rain tests and then tests it afterwards at 900 volts—the same it received when it was brand new. I think we ought to try to get together with Underwriters on this."

'How Noisy Is Noisy?'

As for the problem of noise, when Irwin was asked, "How noisy is noisy?" he admitted the only answer is "What's noisy to you."

"We have found that the higher the temperature goes, the more tolerant people are of noise. They seem to prefer cooling to quiet," interposed R. W. Morgan, chief engineer of Fedders-Quigan.

"A better way of evaluating noise," he said, "is to use a high fidelity tape recorder to check various units."

To another engineer's comment that "the best tape recorder we could get didn't pick up the full noise spectrum," Morgan replied, "I still think a high fidelity recorder is much better than a noise meter."

Heating Firm Adds Air Conditioning

PITTSBURGH — Admiral Heating & Improvement Co. has been opened at 815 Brookline Blvd. in the center of Brookline's business district. Owner is Louis De Paul, who is branching out from his original work as heating contractor.

Firm in its 26 by 60-ft. location handles large Worthington, Typhoon, and Vikomatic air conditioners, and Admiral and Fresh'nd Aire room coolers.

Hyde Opens Branch In Watertown Shopping Plaza

WATERTOWN, N. Y.—George H. Hyde, Inc., long established air conditioning, plumbing, and heating concern, has opened a new branch store in the Watertown Shopping Plaza.

The firm was established 60 years ago and now employs 84 persons. Fred G. Mullins, vice president, is in charge of the new plaza store.

DiLido Will Be Biggest Hotel In Miami Beach

MIAMI BEACH, Fla.—Ground was broken recently for the 329-room DiLido Hotel at No. 1 Lincoln Road which, when completed Dec. 15, will be the city's largest. The hotel will be completely air conditioned, with individual room control.

The construction contract was awarded to Robert L. Turchin, Inc., on a bid of $1,824,000. But air conditioning, electrical, plumbing, and other sub-contracts, plus furniture and equipment, will run the total cost to about $3,500,000, officials stated.

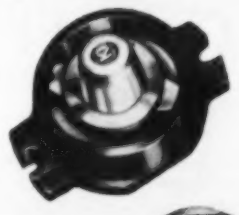
The hotel is being built by the Sirkin family group headed by Milton Sirkin. It will be operated by the DiLido Hotel Corp., in which the principals are Irving and Saul Cohen.

WHY WAIT?
Get your new product info pronto. Use coupon on "What's New" page this issue.

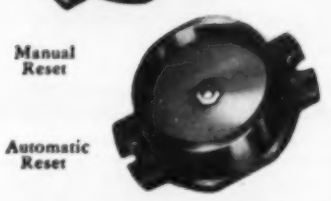
Another Motor Repairman Cheers Burnout Protection of KLIXON Protectors

HANOVER, PA.: Mr. J. C. Bankert, shop foreman of the Swam Electric Company, has worked on thousands of motors through the years. He says:

"We have seldom ever found a burned out motor that was equipped with a Klixon Inherent Overheat Protector. It is a very good safeguard against motor burnouts."



Klixon Protectors Reduce Service Calls and Repairs by Preventing Motor Burnouts



The Klixon Protectors illustrated keep motors in electrical appliances and other motor-driven equipment from overheating and burning out. Look for equipment with Klixon-Protected motors for trouble-free motor operation.

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COLUMBUS 1, OHIO
WORLD'S LARGEST MANUFACTURERS OF REFRIGERATION CONTROLS

Air Purification for Refrigerated Storage

Independent Activated Carbon Units; Used Singly or In Combination Helps To Eliminate Cross-Contamination, Adds to Preservation of Perishables

INDUSTRIAL *applications*

DANBURY, Conn.—Some uses and benefits of air purification in refrigerated storage have been outlined by Henry Sleik, vice president of the W. B. Connor Engineering Corp. here.

He defines air purification as the elimination and control of vaporous, gaseous, or odorous impurities from the air. The only practical method thus far devised for doing this on a commercial scale, he says, is activated carbon.

Sleik pointed out that the primary objectives of refrigerated storage are:

1. The extension of the marketable life of the fruit or produce.
2. Its protection from contamination and disease (such as scald in fruits).
3. The preservation of top quality and flavor.

"Despite the utmost in refrigeration and humidity control," Sleik declared, "one deterrent to the maximum possible preservation of perishables in cold storage is the adverse effect of accumulating gases and vapors in the storage atmosphere—gases and vapors which emanate from packing boxes and crates, from the storage structure, from its insulation and, of course, from the stored produce itself. This last factor proved of peculiar significance especially in the case of fruits."

He continued:

Fruits Continue To 'Live' While Stored

"When an apple, for example, is removed from the tree and placed in storage, it continues to live. It breathes just like other animate substances, inhaling oxygen and exhaling carbon dioxide and, regardless of what we might do, this process will continue in some degree and at some rate until the nourishment stored in the apple, when on the tree, is used up and the tissues begin to break down.

"Storage conditions are, therefore, aimed specifically at retarding this metabolic process. However, in addition to exhaling carbon dioxide, fruits also exhale very small quantities of numerous other gases, some known, some still unidentified.

"Most, if not all, of these are known to have deleterious effects. The old adage of 'One bad apple spoils the barrel' wasn't a superstition. It is now definitely known that, in ripening, fruits generate and release certain gases which, in turn, accelerate the ripening of adjacent fruit.

"Ethylene is one of these culprits but there are others and it is apparent that two or more may team up in the phenomenon.

Gases Contribute to Scald

"In addition to these ripening gases, fruits also exhale still other gases which, acting singly or in combination, are known to contribute to scald and other fruit diseases. It will be apparent consequently that these ripening and blemishing gases operate to counteract or defeat the retarding and preserving function of cold storage.

"Stored perishables are also prone to absorb odorous vapors around them, resulting in impairment of flavor. Some of these culprits are the characteristic sour odors that some storages acquire after long use with humid atmospheres, the solvents released for long periods by some insulating compounds or materials, and, the odors from packing boxes and crates, especially those of fresh pine.

"In mixed storages the danger of cross contamination by the flavors, esters, or aromas of the respective products is always present. Many perishables are seriously impaired by the cross contamination effect of other products stored with them.

"To a lesser extent, such cross contamination may prevail for a time even when one product follows another in the same storage space. As a result, the commercial cold storage industry recognizes numerous what it calls 'non-compatibles'—products which cannot be stored together unless some special, mutually protective measures are adopted.

"It will be evident that what makes these various contaminating influences a problem is their unavoidable accumulation particularly in a cold storage space by virtue of its sealed condition and that they can, therefore, be controlled only by a method that will continuously remove such alien impurities from the storage room air without actually requiring its displacement.

"Before considering the method, however, it may be helpful to consider the nature and behavior of these impurities.

"In the first place, they are usually present in dilute concentrations even when definitely detectable by smell or other manifestation. The concentration is sometimes but a fraction of a part per million parts of air by volume.

"In the second place, their diffusion varies—ethylene, for example, because its weight is about that of air, diffuses rapidly and in all directions, whereas, the aroma gases, being heavier, diffuse more slowly, first descending to the floor and then spreading. The importance consequently of good storage air circulation to at least prevent spot concentration will be apparent.

Relative Vapor Pressures In Ripening Phenomenon

"One theory concerning the physics involved in the ripening phenomenon I have mentioned is that of relative vapor pressures. For instance, ammonia is soluble in water and, if a bowl of water is placed where ammonia is present in the air around it, some, but not all, of the ammonia will be dissolved in the water.

"If the ammonia contaminated air and water are in a sealed chamber or room, the ammonia will continue to be dissolved in the water only until the partial pressures of the ammonia in the air and in the water are in equilibrium.

"If more ammonia is added to the air, more will go into solution. If, on the other hand, the ammonia contaminated air above the water is rapidly displaced with pure air or the ammonia is rapidly extracted from the air, the ammonia will come out of solution, will leave the water until the pressure balance is again restored.

"Relating this to the ripening gases, to the extent that these gases are permitted to accumulate in the air surrounding the fruit, those still being generated by the fruit will be released from it slowly—will be retained in the fruit and accelerate its ripening and deterioration.

Activated Carbon Method

"If, on the other hand, the already released gases are extracted from the air surrounding the fruit or the contaminated air surrounding the fruit is continuously displaced with fresh or purified air, the deleterious gases still being generated by the fruit will leave it rapidly and not tend to be stored up where they do their damage—within the fruit.

"This practice may possibly be regarded as the earliest method employed to eliminate or, at least, retard contamination. Any such procedure in the modern sealed refrigerated storage plant would, of course, be prohibitive.

Custom Installations Too Costly

"The most practical and effective method to date is to equip the storage space with activated carbon air purification. In common with our experience in the application of air purification in other fields, this wasn't accomplished without false starts and some trial and error.

"For example, because many storages were equipped with forced air cooling systems or the conventional bunker room with distributing ducts or unitary cold diffusers, it was first and quite obviously assumed that the most convenient approach would be to simply apply the air purification to such already existing air circulation systems. This proved completely unsuccessful for numerous reasons.

"Essentially, however, it has been conclusively established that (1) the ideal rate of purified air circulation is unique and totally unrelated to the ideal rate of chilled air circulation for cooling purposes and (2) air purification, to be completely effective and foolproof, must be continuous and uninterrupted from the moment the produce is placed in storage—sometimes even before—and until all of it has been removed from storage.

Keeps Air In Motion

"Further, in the all important interest of cost, it soon became evident that storage economy could not support tailor-made air purification installations, custom-built to each particular storage room or system.

"Finally, many storages employ direct expansion coils located in the rooms and are, therefore, not equipped with forced air circulation except perhaps through auxiliary blast fans.

"These discoveries led to the development of independent, self-contained, production built, air purification units designed for the requirements and so capacitated that they can be applied singly or in multiple to suit both the size and capacity of the storage space and species of products stored.

"A typical unit of this kind consists of a casing which houses the requisite number of activated carbon filled, gas and odor adsorption canisters and a suitable built-in air circulating fan and motor.

"It will be noted that it is equipped with a specially designed air ejection nozzle. This nozzle serves two important functions: (1) to eject the purified air at a high initial velocity to as great a distance as practicable to insure maximum circulation and coverage, and (2) to entrain a large volume of room air into the discharge air stream by induction thereby obtaining maximum and intimate mixing of purified and room air.

Cylindrical Design Important

"The over-all function of the air purification units is, therefore, to set the entire storage room air in motion and keep it continuously in motion, thus moving the contaminants away from the stored products while, at the same time, continuously reducing and controlling their concentration by extracting them at at least as fast a rate as they are being generated.

"Actually, the process is identical with ventilation which, again, is simply dilution except that purified return air instead of new air becomes the dilution medium.

"I would like next to call attention to the design and arrangement of the carbon canisters. A single canister consists of an inner and outer concentric perforated cylindrical shell, the uniform annular space between which is completely filled with granular activated carbon.

"Thus, it is hollow within, completely closed at one end and open in the center at the other end, which opening registers with a hole in the manifold plate into which the canister fits.

"Thus, in order for air to flow from the approach to the exit side of the dividing manifold plate, it must pass through the continuous cylindrical wall of carbon from the outside to the inside of the canister.

"The canisters are arranged on the manifold plate to expose a large aggregate of surface and carbon within a compact space. The distribution or spacing of the canisters on the manifold plate is not accidental.

"It is of the utmost importance that the air will flow through each canister at uniform velocity through all parts of the carbon bed, not only circumferentially but longitudinally from end to end of each canister.

"If this were not achieved, that part of the carbon through which the air flow were greater would become saturated sooner than the remainder and, having ceased to be effective, would permit the breakthrough or escape of contaminated air before the carbon in the canister as a whole had become exhausted.

"It was determined mathematically that with this design, when the canisters are so distributed this aggregate area of the space between the canisters is exactly equal to the aggregate area of the circular openings, this uniform air flow will be obtained.

"This is part of a patent claim which was at first denied but subsequently granted on appeal when it was demonstrated by actual tests that moving the canisters further apart or closer together destroyed the all important uniform air flow through all parts of the carbon.

"In this connection, I want to stress also the cylindrical design of construction without which it is not possible to insure uniform carbon bed thickness, that is, rigidity of the containing members without flexing. This arrangement of canisters also insures the uniform or equal apportionment of all of the air among all of the canisters.

"Now these units are produced in standard capacities of 500, 1,000, 1,500, and 2,000 c.f.m. and, as mentioned, can be used in multiple where necessary, such as for example, a 500 and a 1,000 c.f.m. unit where 1,500 c.f.m. of ventilation effect is desired or two 2,000 c.f.m. units where 4,000 c.f.m. ventilation effect is required.

"They can be suspended from the ceiling or mounted on floor stands as desired. The air ejection nozzle of each unit is also equipped with an adjustable deflector, which can be adjusted to produce the most desirable air distribution pattern.

"In apple storage it was found that one (1) c.f.m. of purified air supplied continuously is just adequate to protect 10 bushels of stored fruit against scald and, at the same time, prolong the storage life from four to six weeks beyond that obtained with refrigeration alone provided other conditions are optimum.

"The amount of carbon employed for this rate of air purification in these units will be adequate for a full storage season. Thus, the canisters, which are removable, can be returned between storage seasons for reactivation.

The baby of this type of air purification unit has been aptly called the "Food Saver." It consists of but two canisters assembled with integral circulating fan and motor.

"It was designed for small commercial walk-in meat, dairy, and produce refrigerators. It circulates and purifies 50 c.f.m. and is adequate for boxes having a gross volume of up to 1,000 cu. ft.

"For boxes of greater volume, two or more units can be used. It has been found extremely effective in preventing cross-contamination, prolonging storage life, and keeping the air in the refrigerator fresh and odor-free.

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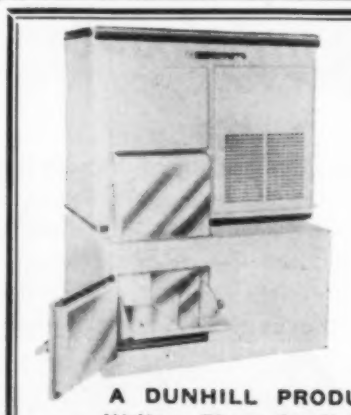

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AIR CONDITIONING (Year-Round Residential)

Warm Air Heating & Air Conditioning Group Sets Program for December Conclave

CLEVELAND—Plans for the 40th annual convention of the National Warm Air Heating and Air Conditioning Association are rapidly nearing completion, announces William D. Redrup, president of the association.

Scheduled for Wednesday and Thursday, Dec. 2 and 3, 1953 at the Hotel Cleveland here, this convention will hear speakers on selling, new markets, new developments, summer cooling, and latest research.

Elmer Wheeler, the master salesman, and C. S. Stackpole, vice president, Eureka Williams Corp., will present the selling theme. Elmer Wheeler is scheduled as the guest speaker for the first day's "get-together" luncheon on Dec. 2.

The economic aims for trade associations will be presented by R. H. Collacott, assistant to chairman of the board, The Standard Oil Co.

Market potentials based on the 1950 Housing Census will be presented by C. E. Price general manager, American Artisan while an official from the National Associations of Home Builders will discuss the potentials of the 1954 new home field. H. C. Gurney, chairman of the association's publicity and merchandising committee, will report on how the association is aiding the industry reach this market through a hard-hitting publicity program.

With the growing feeling among members of the industry that the modernization market will have to provide a more substantial part of 1953's heating and cooling sales than in previous years, C. L. Staples, editorial director, **Domestic Engineering,** and H. O. Chamberlain, modernization market manager, Minneapolis-Honeywell Regulator Co., will present information on the opportunities in the home modernization market.

Plans for the new Business Administration Conferences sponsored by The Sheet Metal Contractors National Association and The National Heating Wholesalers Association will be presented by A. J. Sabathne, president of The Sheet Metal Contractors National Association.

Research reports on the summer air conditioning investigations in Research Residences 2 and 3, along with results of the 4 in. pipe perimeter system, will be presented by personnel from the University of Illinois.

The second day's "get-together" luncheon will have as its guest speaker, Colonel Jack Major, the "Kentucky Colonel." Arrangements for the two luncheons and the social hour scheduled for the evening of Dec. 2 are under the direction of Frank Gibbons, Viking Air Conditioning Corp.

Registration fees will be $5 per representative of member companies. Registration fees for representatives of companies not members of the association are as follows; manufacturers $15; wholesalers, jobbers, distributors, and manufacturer's agents $10; and dealers $7.50.

PROGRAM

MORNING, DEC. 2, 1953

"Forty Years of Progress," W. D. Redrup, president of the association.

"Economic Aims of the Association," R. H. Collacott, assistant to chairman of the board, The Standard Oil Co.

"To Sell Ya Gotta Tell," C. S. Stackpole, vice president, Eureka Williams Corp.

"The future of New Home Building," an official of the National Association of Home Builders.

LUNCHEON SESSION

"Selling the Sizzle," Elmer Wheeler, Sizzle Ranch, Texas.

AFTERNOON, DEC. 2, 1953

Nomination and election of officers and members of the board of trustees.

"Market Potentials Based on 1950 Housing Census," C. E. Price, general manager, American Artisan.

"Bay City Story On Heating," C. L. Staples, editorial director, **Domestic Engineering.**

"Participation in the Modernization Market," H. O. Chamberlain, modernization market manager, Minneapolis-Honeywell Regulator Co.

"Publicity and the Market," H. C. Gurney, chairman, publicity & merchandising committee.

MORNING, DEC. 3, 1953

"Membership Growth," G. W. Denges, vice president & sales manager, The Williamson Heater Co.

"More Profits in Commercial and Industrial Work," R. C. Jaye, president, Syncromatic Corp.

"Progress in Research," F. L. Meyer, president, The Meyer Furnace Co.

"What's Happening in the Field," C. W. Nessell, account executive, Minneapolis-Honeywell Regulator Co.

"Legislation," C. L. Sapp, president, Farquhar Furnace Co.

"Traffic and Tariff," E. F. Hurkman, traffic manager, Lennox Furnace Co.

Report on Business Administration Course, A. J. Sabathne, president Sheet Metal Contractors National Association.

LUNCHEON SESSION

"Taxes, Women, and Hogs," Colonel Jack Major.

AFTERNOON, DEC. 3, 1953

"Small Pipe Heating In Research Residence No. 2," H. T. Gilkey, University of Illinois.

"Summer Cooling in Research Residence No. 3 Using a Perimeter Loop System," D. R. Bahnfleth, University Of Illinois.

"Summer Cooling in Research Residence No. 2," H. T. Gilkey, University of Illinois.

Interest In Cooling In 'Trend' Homes Nearly As High in North as In South, Coleman Says

WICHITA, Kans. — All over the country, year-round air conditioning is the No. 1 feature in the 1953 home hit parade, as evidenced by public reaction in open house showings of 50 Coleman trend homes undertaken this year in various parts of the nation, according to the Coleman Co. here.

"While the homes are scattered from New York to California, and ranged in cost from $15,400 to $38,000, they have one thing in common," the company said. "They all have as their basic pattern a design developed to embody the features most wanted by Mr. and Mrs. America in a new home, as disclosed by a nationwide survey by Coleman.

"As such, all are one-story homes of contemporary style, with a high degree of open planning for spaciousness and maximum utilization of space for family living. Demands are satisfied both for year-round air conditioning and large window areas, combining maximum indoor comfort and outdoor outlook."

Said Sheldon Coleman, president of the company: "Nearly half a million persons thus far have inspected these homes, and in their reaction have emphatically confirmed our survey finding that the interest in year-round air conditioning is almost as strong in the north as in the south.

"There is a growing realization that summer air conditioning means far more than bearing summer heat and humidity—that it is, in fact, a new emancipation proclamation for everyday living. As such, its benefits are not sectional, but national, including better health, with fewer colds and allergy troubles, less dirt and dust, less outside noise.

"Also evident in the public reaction to these model homes is the delight with which people find that the spaciousness and the open feeling they want need not be sacrificed for air conditioning. It comes as something of a welcome surprise to many to find that air conditioning does not impose new limitations on house design, but rather gives new freedom to enjoy all the advantages of modern planning."

Even as the acceptance of home air conditioning was seen to be national, rather than sectional, so was the acceptance of the house design itself. The same rambling pattern and the same low-lying roof were found to be as acceptable in northern Illinois as in Texas and in New York as in California. The only differences in sectional preferences were the favoring of garages over carports outside of the south and use of basements, as against slab construction, in the north.

The 50 homes are all variations of the prototype trend home designed by Ned A. Cole of Austin, Texas, and have been built by local builders in association with Coleman distributors and dealers in their respective localities.

Besides incorporating the new-home preferences of a national cross-section of people who either had just bought a new home, or were planning to build, the design combined a maximum of cost-saving building techniques, it was pointed out.

Allison Becomes Consultant To G-E 'Weathertron' Dept.

BLOOMFIELD, N. J. — Robert P. Allison has been appointed manufacturing consultant to the General Electric Co.'s Weathertron department, according to H. M. Brundage, department general manager.

As manufacturing consultant, Allison will be concerned with coordinating manufacturing facilities with product development.

The appointment is in line with the company's expansion of activity in the heat pump field (Weathertron is G-E's name for its heat pump.) The units are currently being produced in volume at the company's air conditioning division plant in Bloomfield, N. J. and are being marketed in the south, southwest, far west, and selected areas in the north.

Allison has been with General Electric since 1935. He was formerly manager of manufacturing of conduit products for the construction materials department in Bridgeport, Conn.

He has also been manager of manufacturing of the wire and cable division, and works manager at the G-E plants in Lowell, Mass., and Poughkeepsie, N. Y.

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Here's an easy way to sell heating along with summer conditioning

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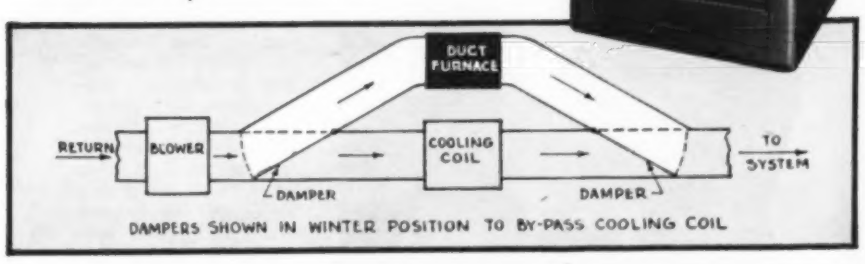

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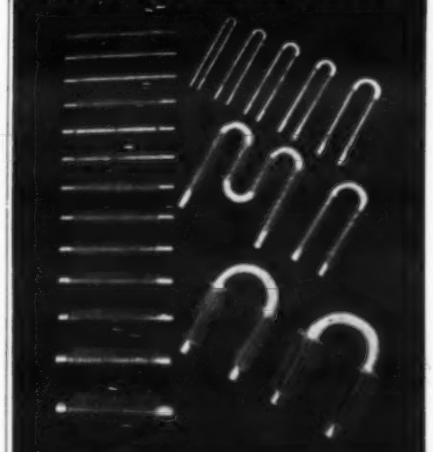

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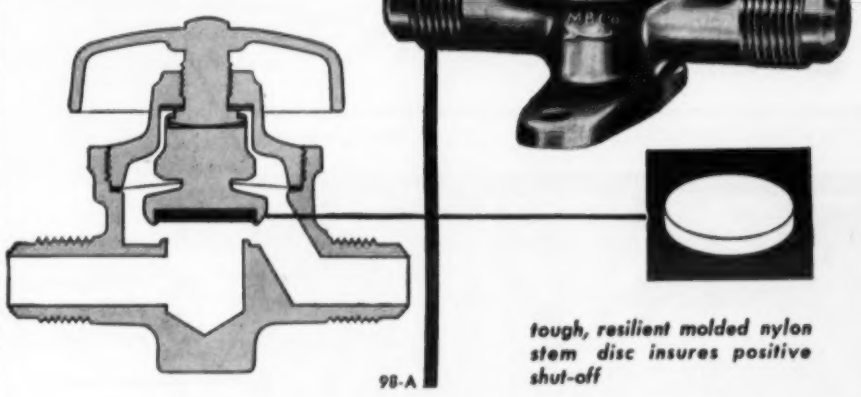

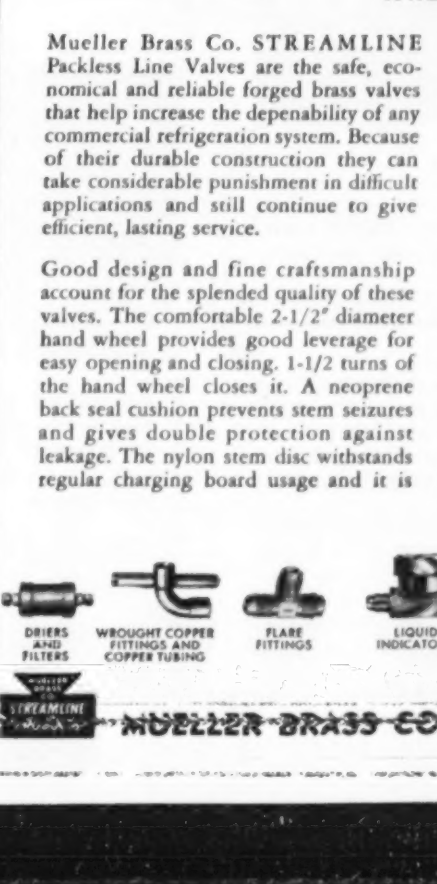

98-A

tough, resilient molded nylon stem disc insures positive shut-off

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Good design and fine craftsmanship account for the splended quality of these valves. The comfortable 2-1/2" diameter hand wheel provides good leverage for easy opening and closing. 1-1/2 turns of the hand wheel closes it. A neoprene back seal cushion prevents stem seizures and gives double protection against leakage. The nylon stem disc withstands regular charging board usage and it is chemically inert to all standard low-pressure refrigerants. The disc is resilient and shuts off the flow easily and positively even when obstructions become lodged against it. Large metal diaphragms have been pressure-tested for 100,000 openings without a failure. A "Full-Flo" seat area and refrigerant passage virtually eliminates pressure drop.

STREAMLINE Packless Line Valves are sturdy and compact—only 3" high—with in-line ports for quick, easy installation. They are available in 1/4", 3/8", 1/2" and 5/8" sizes with flare or solder type end connections. Available from your refrigeration wholesaler.

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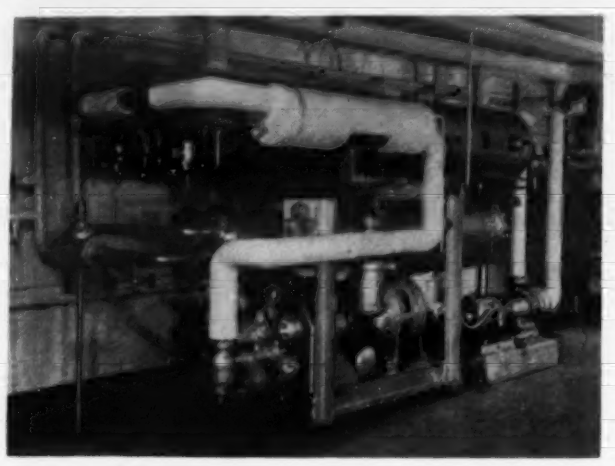

CHILLED WATER from this 60-hp. system provides summer cooling for the Verheyden funeral home in Grosse Pointe, Mich., largest in America. Note floor tile.

HOT WATER for heating is provided by this oil-fired boiler. Fan unit provides induced draft to compensate for undersized flue.

Nation's Largest Funeral Home

Uses 16 Different Zones, Each with Its Own Control System; 60-Hp. Unit Powers System To Provide Air Conditioning for 2-Story Bldg.

By C. Dale Mericle

GROSSE POINTE, Mich.—Although it has a record of many conventional package type installations in funeral homes throughout the Detroit area (some of which have been described in previous issues), the contracting firm of Chas. R. Beltz & Co. takes greatest pride in a large chilled water system serving the Chas. Verheyden, Inc. establishment here.

Sixteen different zones, each having its own control system designed to permit a maximum selection of air conditions to meet varying requirements, are provided in the Verheyden job, which is powered by a 60-hp. Airtemp machine.

Such a system, with its complicated control system, is perhaps befitting this funeral establishment, which has been described as "the largest and finest in America specifically designed for the purpose."

The funeral home built 10 years ago was nearly doubled in size and completely remodeled a year and a half ago. The present air conditioning was installed at that time and has now been through two grueling seasons of hot summer weather in addition to providing winter air conditioning.

14 Separate Parlors

The Verheyden home has 14 separate parlors and is big enough to permit three large funeral services to be conducted simultaneously. Parking area in the basement, for example, is sizeable, taking 15 large cars.

There are 16 separate air-handling units in this installation. Eight of these are large units, the other eight being small ones.

Four large units are located in the basement of the two-story structure, as is the chiller and the oil-fired boiler which supplies hot water to the air units for winter heating.

The other four large units are in the attic along with four small units. These serve the second-floor area. The remaining four small air-handling units are on the first floor, being located in the walls to handle individual rooms.

156 Water Shut-Off Valves Were Used

Other indications of the size of this installation is the fact that 14,000 lbs. of sheet metal were employed; there are also 156 water shut-off and balancing valves, all numbered and labeled with a name tag made especially for the Beltz company.

Each of the 16 systems can be operated on 100% fresh air if desired, but normally about 10% fresh air is used.

This feature is especially important in a funeral home application because of the usual presence of a great number of flowers. If the fragrance of flowers should become too heavy, a greater percentage of fresh air can be brought into the space readily. The fresh air control is also a factor in keeping the flowers from wilting.

4 Units Handle First Floor

The four large air units in the basement serve the first-floor area. Each of the three large chapels is supplied by one of these, while the fourth handles the front entrance area, lounges, etc.

Second floor includes offices, lounges, rooms that can serve as a chapel, a large casket display room, and extensive living quarters.

High-side wall registers with return air grilles at the baseboard are employed throughout. All ductwork is insulated on the inside to keep heat loss and noise transmission at a minimum.

Minneapolis-Honeywell controls are used, the control system having been engineered and installed by the Beltz contracting firm.

In the conditioned space itself in each zone there are three controls grouped conveniently on the wall: a thermostat for heating and cooling, a fan switch with pilot light, and a switch which permits remote control of the fresh-to-return-air proportioning damper.

Function of the thermostat is to regulate air temperatures delivered to the zone by controlling face and bypass dampers at the coil in the air-handling unit. Dampers themselves are positioned by a damper motor.

Another damper motor is employed for the fresh-to-return-air damper. Although the latter is primarily controlled by the wall switch, another control in the duct ahead of the coil overrides the wall switch when the air temperature falls to 34° F. This is to prevent freezing the coil during winter operation.

Fresh Air Damper Ties In With Ductwork

Control of the fresh air damper is also tied into a ductstat located just beyond the coil. If the air temperature here falls to 33° F., this stat closes the fresh air damper, and, in addition, shuts the coil face damper and turns off the fan.

Further protection is provided by a special two-position valve on the coil so connected that if the fan shuts off for any reason, the coil is shut off, and the face damper and fresh air damper are closed.

Still another control provided is a ductstat in the discharge air beyond the fan. This is set to stop the fan if the discharge air temperature falls below a minimum point. Purpose of this primarily is to prevent delivery of air to the conditioned space at too

(Concluded on next page)

HERE'S HOW TO START A PUMP PURCHASE

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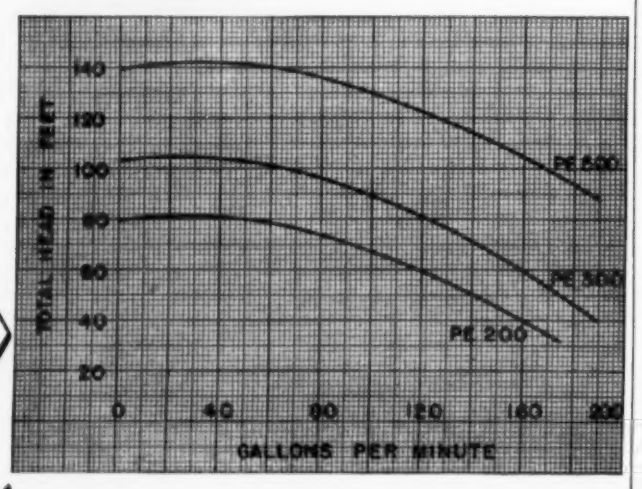

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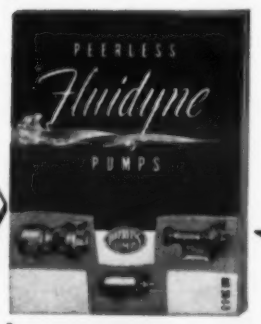

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Write for Catalog Page 707-1

The LAU Blower Company, 2202 Home Ave., Dayton 7, Ohio
World's largest manufacturer of furnace blowers

UNIQUE treatment of outside air intake grilles makes them harmonize fully with architectural beauty of building. Arrows indicate grilles, designed to simulate shutters.

FUNCTIONS of various controls on one of the 16 air-handling units in the Verheyden funeral home are discussed by John Patzer, supervising engineer, and John Weiss, sales engineer, of the Beltz organization.

Cooling to Heating Changed Manually--

(Concluded from preceding page)

low a temperature, which might cause an impression of drafts.

One more control at each air-handling unit is an aquastat in the water line leading to the coil. The aquastat senses whether cold or hot water is being piped to the coil.

If hot water hits the aquastat, it changes the control system over to heating; conversely, cold water will cause the aquastat to set the controls on the air-handling unit for summer cooling operation.

The over-all system changeover from summer cooling to winter heating is done manually, however. This is a simple operation which calls for changing six hand valves located at the boiler and throwing a master switch at the water chiller. As indicated, when this is done, the 16 control system for each air-handling unit automatically change from cooling to heating, or vice-versa.

Complete piping for both the heating and cooling operation was installed by Beltz, the reverse loop principle being used throughout.

Three water pumps are used to circulate water through the system to the air-handling units and return. Two pumps are used during heating; only one when cooling. Although these three pumps are separate, they are so piped up that they can be used interchangeably in the event of an emergency.

If the cooling pump failed, for example, one of the heating pumps could be quickly valved into the cooling circuit. Likewise, if one of the heating pumps should fail, the cooling pump could be used for this purpose.

Incidentally, the flue which had served the original building was retained for the enlarged structure but was too small to handle the increased heating load. To avoid any difficulty on this score, an induced draft fan unit was installed at the boiler.

Consulting engineer for the Verheyden installation was Hyde & Bobbio. The architect was O. C. Bouschor.

Window Unit Use Prompts Public To Demand Cooler Home Air Conditioning

BUFFALO — Due to widespread sales of window-type air conditioners, householders now want central cooling units to provide lower room temperatures, according to Reginald W. Taylor of Houston, president of the American Society of Heating & Ventilating Engineers.

Speaking at a dinner of the society's Western New York Chapter at Buffalo Forge Co. here, Taylor said engineers' headaches have multiplied since consumers have had window units to experiment with and have developed more exacting tastes.

Homeowners' demands on central home cooling have skyrocketed, he said, pointing out that in Houston householders want cooler air conditioning.

However, glancing at the thermometer can be misleading, he noted, because it may not be accurate, and also because it doesn't mean a lot unless relative humidity and other factors are considered.

Houston Claims 4,000 Air Cooled Cadillacs

HOUSTON—This city, the South's biggest, lays claim to another "first" —more air conditioned Cadillacs than any other.

Nobody knows for sure how many Cadillacs in Houston are air conditioned, but the *Houston Post* published—as "a good guess"—the figure of 4,000.

Radical Loom Design Provides Precise Control of Temperature and Humidity

NEW YORK CITY—Precise control of temperature and humidity has been incorporated in a new loom of radical design that is expected to improve the product, better working conditions, and reduce operating costs.

First public demonstration of the loom took place recently in a subbasement on Worth St. here, textile center of the world, which was equipped for complete control of atmospheric conditions by the Bahnson Co. of Winston-Salem, N. C., supplier of humidifying and air conditioning equipment.

The loom was conceived by Borden Mills, Inc., of Kingsport, Tenn., and developed by the Hunt Loom and Machine Works of Greenville, S. C.

Chief advantages claimed are: (1) it requires no lubrication, hence will not get grease, oil, or dirt on cloth, loom, or floor; (2) it can be stopped and started precisely—within 1/400th of a second; (3) operates under conditions of atmospheric control that make for controlled moisture content of the stock and hence allow cloth of maximum uniformity.

Non-lubrication feature of the loom is achieved by means of oil-impregnated bushings, nylon gears, and anti-friction bearings. This means that that oily "seconds" are eliminated along with the need for oiling, lubricating, sweeping, and cleaning.

Precision starting and stopping is obtained with an electro-magnetic clutch and brake.

The method of controlling humidity content of the cloth, which the firm calls "Borden Tension Regulatory Maximizer," has its basis "in the novel concept that atmosphere is a raw material," the company states.

"Proceeding on this principle, the looms have been installed in rooms which have been precisely atmospherically conditioned, both in relative humidity and in temperature. Air-collecting chambers that run the width of the loom below the drop wires have been installed. This chamber forces the scientifically prepared atmosphere directly through the yarn, permitting the moisture to be distributed evenly to the warp yarn with resulting tension regularity.

"By means of ducts which connect with a network of pipes (big enough for a man to crawl through) under the floor, the air is drawn into Bahnson central stations where the air is conditioned and returned at the proper moisture content. Working conditions of 64% r. h. and a temperature not over 80° F. has been proven to be entirely possible."

Edmonds Heads Rediseo Branch In Philadelphia

DETROIT—Appointment of V. E. Edmonds as manager of Refrigeration Discount Corp.'s Philadelphia, Pa., branch has been announced.

Former manager of the Buffalo, N. Y., branch, Edmonds has been with Rediseo since 1949.

Rediseo is a financing organization serving Kelvinator and Leonard retailers.

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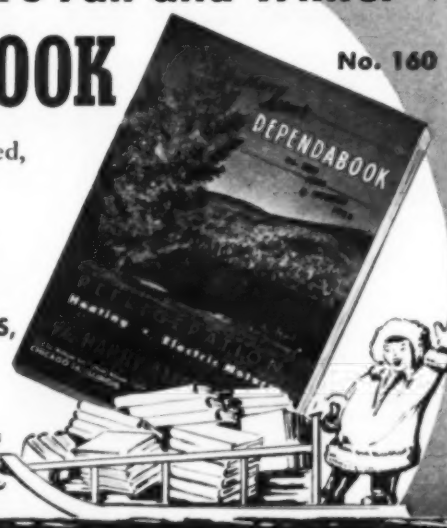

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Refrigeration Problems

and their solution

by Paul Reed

For Service and Installation Engineers

Paul Reed

Expansion Valves For Ultra-Low Temp. Systems (1)

Question:

From time to time during the past few years, several articles in your column have been on the construction and design considerations of low temperature cabinets. We are referring particularly to the issues of Dec. 24 and 31, 1951, "A Low Temperature Cabinet," and of Feb. 25, 1952, "A New Low Temperature Refrigerant, 'Kulene-131.'" We have built a couple of small units using "Kulene-131" and "Freon-12" in cascade as you described.

The main problem that has confronted us has been one of the proper expansion device that will handle both the pull-down and the low temperature operation satisfactorily. At present, we are using a — model thermostatic expansion valve with moderate success, but we would appreciate any further suggestions relating particularly to the refrigerant control.

Answer:

The construction and design of cabinets for commercially and dependably producing temperatures below -50° or -60° F. present some problems not ordinarily encountered in equipment for the commonly used temperatures of -25° F. or above. At least problems at the higher temperatures are not so critical as at ultra-low temperatures. Factors that are of little consequence at the higher temperatures, become of major importance at temperatures below -50° F.

Not the least of these is the expansion device. It is not too difficult to select an expansion valve, for example, that will operate well at the low temperature. Getting a valve to operate properly through the range of pull-down is the problem.

In the case of the thermostatic expansion valve, the inherent pressure-temperature characteristic of refrigerants, and other volatile liquids used for charging the power elements of the valves is the basic source of the difficulty.

Take, for example, a "Freon-12" thermostatic expansion valve for use on an evaporator at 25° F., and with the power element of the valve charged with "Freon-12." By properly proportioning the diaphram area and the loading spring pressure, the valve can have full capacity with a minimum operating superheat of 6 or 7° corresponds to pressure difference of about 5½ p.s.i. It is not difficult to build a valve that will operate on a pressure difference of 5½ p.s.i.

Saturation pressure corresponding to 25° is 24.5 p.s.i.g. (39.2 p.s.i.a.)

25° plus 7° superheat equals 32°.

Saturation pressure corresponding to 32° is 30 p.s.i.g. (44.7 p.s.i.a.)

Pressure difference corresponding to 7° is 30 — 24.5 or 5.5 p.s.i.

If that same valve is used on a -60° F. evaporator, it will still take a 5½ p.s.i. pressure difference to operate the valve at full capacity. But at -60°, a pressure difference of 5½ p.s.i. corresponds to a temperature difference of 25°. This statement is arrived at as follows:

"Freon-12" at -60° F., saturation pressure 5.4 p.s.i.a.

5.4 p.s.i.a. plus 5.5 p.s.i. equals 10.9 p.s.i.a.

Saturation temperature of "Freon-12" at 10.9 p.s.i.a. is approximately -35°. Difference between -60° and -35° is 25°.

So instead of a 7° minimum operating superheat that the valve could maintain at 25°, it would have a minimum operating superheat of 25° on a -60° evaporator.

At 25°, only a small part of the evaporator is required in order to obtain a superheat of 7°. At -60°, a large part of the evaporator must be used to superheat the refrigerant 25°; so the amount of active surface of the -60° evaporator will be greatly reduced.

For the expansion valve to operate on a 7° superheat at -60°, would require that the valve be designed to operate on a pressure differential of .4 p.s.i., if the power element were charged with "Freon-12."

Therefore, some refrigerant or volatile liquid must be used that, at -60° has a pressure difference of about 5½ p.s.i corresponding to a temperature difference of 7° F.

This can be done, but it may have a very large pressure difference at 25°, so that 5.5 p.s.i. would correspond to a temperature difference of a great deal less than 7°.

For most refrigerants this ratio of pressure-temperature holds true, as will be seen by observing a group of pressure-temperature curves on the same chart. Most of them run just about parallel with one another, with a one-pound pressure difference corresponding to three or four times as many degrees of temperature difference at 25° as at -60°.

On that chart, some curves will be observed that do not run approximately parallel to the others. They may cross one or more of the other curves, so that by selecting such a refrigerant for the power element charge, a fairly constant superheat can be maintained throughout the pull-down range from the 25° to -60° in our example.

This is known as cross-charging and is used extensively, not only for low temperature work but also for causing the valve to remain closed above selected temperatures—similar to gas-charging—and other specialized applications.

(To Be Continued)

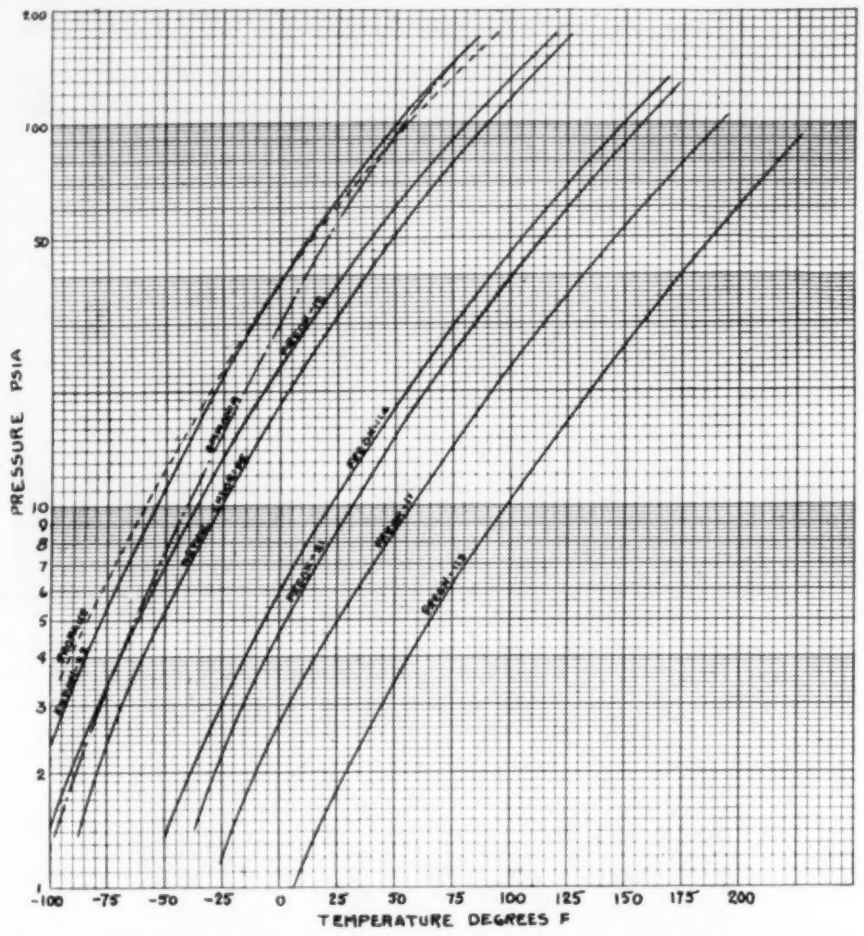

FIG. 1—Showing how pressure-temperature curves of most of the common refrigerants parallel one another. Propane curve crosses "Freon-22" curve and ammonia curve crosses curves of "Freon-12" "Freon-22," and propane.

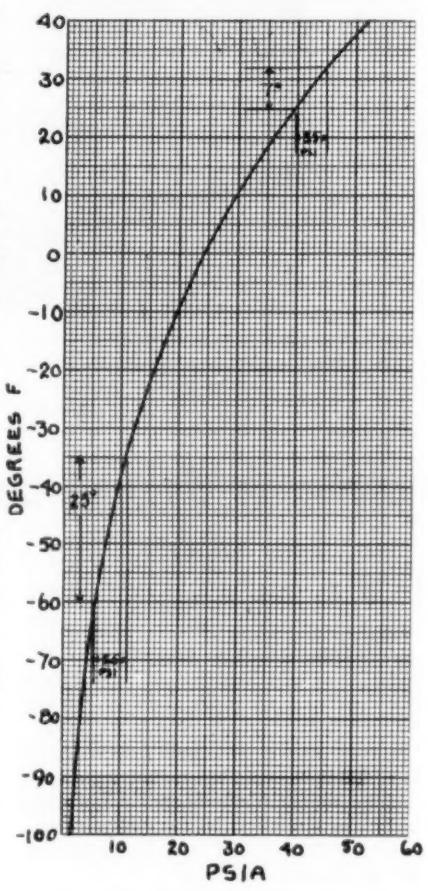

FIG. 2—How 5½ p.s.i. pressure difference at 25° corresponds to 7° and at -60° corresponds to 25°.

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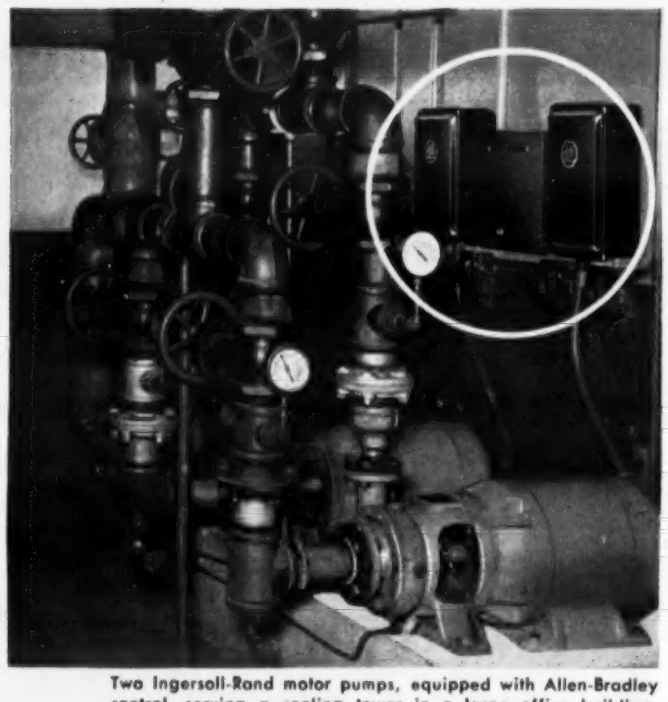

Two Ingersoll-Rand motor pumps, equipped with Allen-Bradley control, serving a cooling tower in a large office building.

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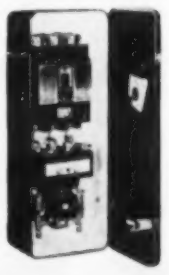
SPECIAL REFRIGERATION CONTROL UNIT

PRESSURE AND TEMPERATURE CONTROLS

MANUAL STARTER



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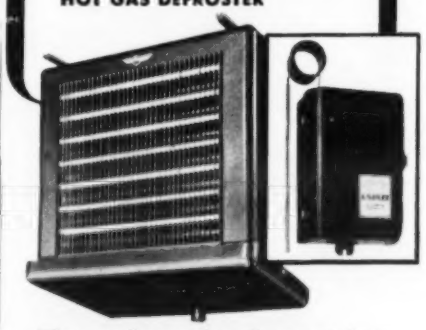

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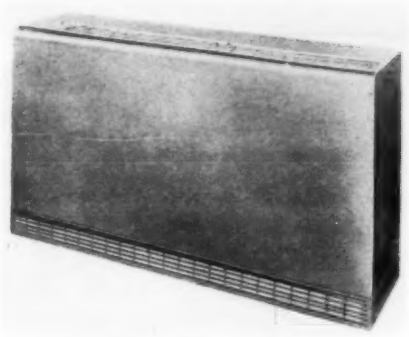
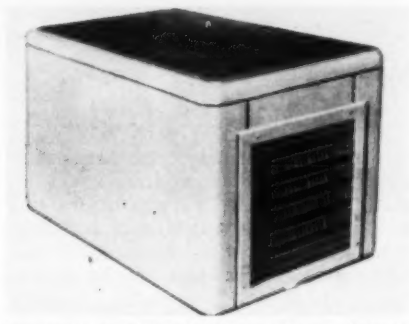
U.S. Radiator Shows 2 Year-Round Conditioners





——KEY NO. C-1030——

DETROIT—Two new year-round air conditioners are announced by United States Radiator Corp.

These units come in vertical and horizontal models and can be used for both cooling and heating. For summer cooling, a chilled water compressor is located at a remote source.

For winter heating, hot water is pumped through the same pipes from a boiler located in a basement, utility room, etc. Merely turning a valve permits changing from summer cooling to winter heating as the weather requires, the company said.

The vertical model is a free-standing unit, equipped with a floor cabinet, for non-recessed installation.

The horizontal model is designed for either recessed or non-recessed installation. It can be installed recessed without a cabinet, in the space over a clothes closet, or in a hall. A cabinet is also available for non-recessed ceiling suspension installations.

Both horizontal and vertical models include self-contained fans, diffusing grilles, cleanable air filters, and copper coils with aluminum fins.

"Operation is practically silent, and no ductwork is required—except in cases where the unit is to be used to serve more than one room," the company stated.

Cooking Unit Has 3-Heat Control, Automatic Timer

——KEY NO. C-1031——

LONG ISLAND CITY, N. Y.—An automatic "bell-ringing" timer which can be set for up to two hours and three-heat switch control are features of Stern-Brown, Inc.'s model V53 automatic barbecue-rotisserie-broiler-grillette combination.

Priced at $69.95 retail, the "Superstar" unit barbecues, roasts, broils, grills, fries, and toasts food by means of infrared heat. It measures 18¼ in. by 10 13/16 in. by 11 in. high.

Of double wall construction, the appliance also features adjustable broiler tray positions, removable broiler tray racks, spatter shield with oven glass window, concealed rotisserie motor with separate switch, and bakelite corners and handle.

A model (35) without automatic timer is available at a retail price of $62.95.

Thermostatic Control on New 'Hotray' Models

——KEY NO. C-1032——

NEW YORK CITY — A thermostatically controlled radiant glass "Hotray" to keep foods hot for any length of time on the dining room table has been introduced in two models by the Salton Mfg. Co., Inc. here.

One, the "Hotray-Special" (HT-6) measures 9 by 14 in. and is priced to retail at $12.95. The other is the "Hotray-Epicure" (HT-5-T), measuring 15 by 20 in. and retailing at $29.95.

Both operate on 115 volts. The Special draws 200 watts and the Epicure 625 watts.

Both models consist of silvery Ra-Grid radiant glass enclosed in an aluminum frame with plasti-cool handles. The radiant glass is shatterproof and guaranteed for safety. When plugged into an a.c. outlet, it reaches and maintains a temperature above 200° F.

Thermostatic control assures that food will not dry out or change taste, the company said. Salton claims the Hotray will not mar table surfaces or damage the table cloth.

'Thermo-Vent' Controls Home Fresh Air Supply

——KEY NO. C-1033——

BETTENDORF, Iowa—Damp-Vent Co. now has placed on the market its third ventilation product, "Thermo-Vent." Thermo-Vent is an automatic control that supplies fresh air for residential heating systems.

It is now possible to supply controlled fresh air—geared to each individual installation—directly to the heating system's cold air duct. Or the Thermo-Vent can be connected directly to the combustion chamber to renew the constantly depleted oxygen supply.

Thermo-Vent is automatically opened and closed by a specially designed, sealed thermostat. This unit opens as the temperature rises and closes to keep out harsh cold, the firm stated.

Thermo-Vent is of non-corrosive treated, cast aluminum construction with a fine mesh copper screen. The sealed thermostat is set at the factory to close at 0° F. and has a 70° temperature range. An easily controlled thermostat cover can be turned ⅛ in. to change open and close assembly 10°.

A 4-in. opening through the sill or basement window pane accommodates the Thermo-Vent which connects to standard 4-in. heating pipe. The unit can be placed at desired location while building is being constructed or applied to older buildings.

The Damp-Vent Co. is the originator of Damp-Vents which help eliminate paint peeling and moisture damage and the D. V. Cornice ventilator for better attic circulation.

Garbage Disposer Has Super 'Hush Cushions'

——KEY NO. C-1034——

LOS ANGELES — A new electric garbage disposer featuring heavy duty resilient super "Hush Cushions" for quieter operation has been announced by the Given Mfg. Co. here.

Made in two models, the SH5500 and SH7000, the new "Waste King Pulverator" is said to fit almost any sink. The SH7000 has a built-in dishwaster inlet that saves double trap installation.

An improved cast steel alloy shredding sleeve eliminates all garbage faster, the company says. Graphite shaft seal and seal plate protect the ¼-hp., 1,725 r.p.m., 50-60-cycle, 115-volt electric motor. Bearings are permanently lubricated.

Information Center

For *more information* on What's New products, current literature and catalogs available, equipment advertised in AIR CONDITIONING & REFRIGERATION NEWS use Key Numbers where designated or specify products advertised and we'll see that you receive this information promptly.

What's New or Current Literature Available

Key No. ..... Key No. .....
Key No. ..... Key No. .....
Key No. ..... Key No. .....
Key No. ..... Key No. .....
Key No. ..... Key No. .....

Products Advertised
(list name, page, and issue date)

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Have a Solenoid Problem?

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If you need a Solenoid Valve for air, water, steam or refrigerants in capacities to 50 tons Freon-12, call on DETROIT. Chances are, you'll find an immediate solution with a standard DETROIT model. If not, for some special applications DETROIT will design a valve to meet your requirements. Either way, you'll find it pays to call on DETROIT—your Specialist in Solenoids.

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Division of American Radiator & Standard Sanitary Corporation
Canadian Representatives in Montreal, Toronto, Winnipeg—Railway and Engineering Specialties, Ltd.
AUTOMATIC CONTROLS for REFRIGERATION
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AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS

Current LITERATURE available

To obtain further information on the literature listed below, please refer to key number preceding listing. Please use the "Information Center" form on "What's New" page.

How Mortgage Plans Boost Sales Told by Whirlpool

——KEY NO. O-1030——

ST. JOSEPH, Mich.—A 5 in. by 7 in. two-color booklet entitled "How to Boost Sales With 'Package' and 'Open End' Mortgage Plans" has been distributed to 15,000 dealers, distributors and architects by Whirlpool Corp. It explains in simple terms what the plans are and how they benefit both customer and dealer.

Both mortgage plans are designed to make complete automatic laundries available to customers. The "Package" mortgage may also be used to cover individual units—automatic washer, automatic gas or electric dryer, and automatic ironer—or any combination of the three.

This mortgage, planned for home builders and home buyers, simply includes the cost of an automatic laundry, after the down payment, with original house and lot mortgage. This increases regular mortgage payments only a few dollars monthly avoiding an additional large financial burden to the customer.

Under the "Open End" mortgage plan, home owners may modernize with a completely automatic laundry and pay for it on a long-term basis. The loan to cover the laundry cost is spread over the remaining life of the existing mortgage at the same low interest rates, increasing monthly payments by only a few dollars. No down payment is necessary with this plan.

In addition to explaining how the two plans work, the pocket-size booklet advises dealers on ways to advertise the plans and locate new sales prospects.

Bulletin Describes Heating System Controls

——KEY NO. O-1031——

WESTERN SPRINGS, Ill. — How to produce a better heating system, get heat to that last radiator, have warmer floors, stop heating system noises, and stretch the capacity of the burner, boiler, and radiation is described in three new "salesman's" 4-page bulletins issued by Automatic Devices Co. here.

Bulletin E-353 describes the "how" and the end results of "Weather-Flo" control operation. Bulletin F-453 describes its application to hot water systems.

Bulletin H-653 describes its application to warm air systems.

Remco Bulletin Describes Filter-Driers, Other Items

——KEY NO. O-1032——

ZELIENOPLE, Pa. — Remco, Inc. here has issued a new four-page bulletin (R-9) describing "Super-Flo" filter-driers, "Cross-Flo" drier-filters, standard duty driers, "E-Z-See" liquid indicators, and "Frost-Tite" flare nuts.

The company said the new Super-Flo filter-drier "embodies a new concept which permits smaller and therefore, less expensive units to be used." It is thoroughly explained by means of cutaway, flow-line drawing, and detailed tables.

"Moisture removal capacities from 80° through 150° F. demonstrate both physical and chemical ability of these units to absorb moisture even in hot liquid lines, and the principle of massive filtering is also presented," it was stated.

Glenco Refrigerator Line Described In Broadside

——KEY NO. O-1033——

PHILADELPHIA—A broadside describing the Glenco line of all metal welded commercial reach-in refrigerators was issued recently by Glenco Refrigeration Corp. here.

Manual Gives Techniques of Kitchen-Laundry Planning

——KEY NO. O-1034——

PITTSBURGH—A 48-page manual that gives techniques on how to design the kitchen and laundry for attractive appearance and maximum efficiency is now available from the Westinghouse Electric Corp.

This new booklet, following a simplified step-by-step procedure, presents the principles of planning a modern electrical kitchen and laundry by the most efficient use of space and the most practical use of equipment. Information given can be readily adapted to kitchens and laundries of any size and shape.

Not only is planning covered completely, but there are also shown many convenience ideas, examples of well-designed kitchens and laundries, and suggestions for lighting and wiring. Many clear diagrams, sketches, dimension-drawings, and illustrations help make planning easier . . . and correct.

Copies of "Kitchen-Laundry Design Ideas," B-5866, are available at 50 cents each.

Brochure Describes Cooler Filtering Media

——KEY NO. O-1035——

LOUISVILLE, Ky. — A new brochure on "Amer-glas" resilient glass fiber filtering media for furnaces or air conditioning units has been prepared by the Amer-glas Div., American Air Filter Co., Inc. here.

The four-page folder points out that the filtering media can be bent, squeezed, or shaped to any form without losing its filtering efficiency. Thus it can save space inside the unit, offer maximum filtering surface, and hold leakage to a minimum.

Copies of the folder are available without charge.

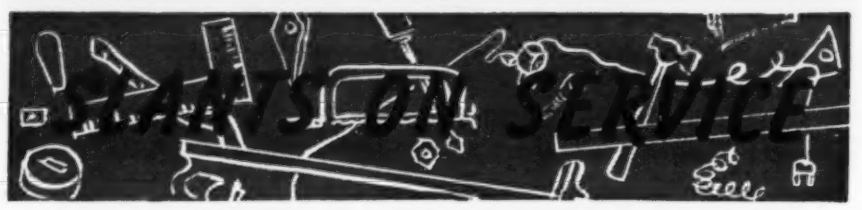
EEI Prepares 56-Page Cook Book for Beginners

——KEY NO. O-1036——

NEW YORK CITY—"The New Cook's Cook Book," a 54-page, illustrated, 2-color booklet for the cooking novice has been made available by Edison Electric Institute. Developed by the Institute's Home Service Committee, the booklet was designed and priced for widespread distribution by the home service departments of the electric utility companies.

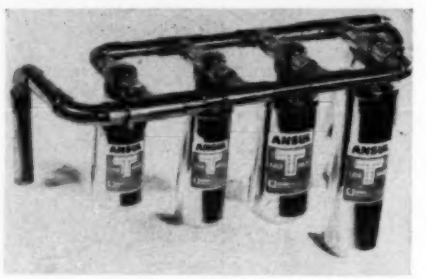
The booklet offers a new concept in cook books by including, in addition to over 100 recipes and complete menus, such basic information as definition of cooking terms and measurements, advice on buying meats, poultry, and fish, hints on how to "dress up" the appearance of food, and the selection of proper utensils. It provides the teen-ager, bride, and housewife with all the cooking "know-how" necessary for the beginner.

"The New Cook's Cook Book" is available from the commercial department, Edison Electric Institute, in minimum quantities of 100 at a price of $16 per 100 copies to EEI member companies. An additional charge of 10% will be made to non-members of EEI.



"Slants on Service" is a "package" devised by the NEWS to meet the needs of readers in the service and contracting business.

Manifolding Driers Avoids Problems of Big Units



"Experimental work in the Ansul refrigeration laboratory has indicated that the need for oversize driers can be completely eliminated if a series of smallers driers are manifolded in a refrigeration line [see photo]," declares Louis A. Wallace, Ansul's senior refrigeration engineer in the company's *News Notes* magazine.

"From time to time a refrigeration serviceman is faced with the problem of replacing or servicing an unusually large drier. By unusually large, we mean a drier containing 200, 300, or even up to 1,500 cu. in. of desiccant," Wallace says. The 1,500-cu. in. drier, weighing over 250 lbs., is to our knowledge the largest unit manufactured.

"As most working refrigeration men know, servicing one of these oversize driers can create a lot of problems. (1) They are bulky and hence hard to handle. (2) They are expensive, and in most cases because of their cost and bulkiness, impractical to keep in stock. If it is necessary to order one for a special job, the delay in delivery may cause considerable inconvenience.

"(3) In replacing the drier the serviceman runs into a serious moisture pick-up problem and as a result the maintenance cost on these units is increased appreciably.

Replacing a large tonnage drier," Wallace emphasizes, "means a complete and time-consuming teardown of the unit."

He cites several advantages for the manifolding technique:

Inventory can be reduced because regularly stocked driers can be used on these special jobs.

The smaller driers are easily handled, and the cost to both serviceman and customer is reduced.

"Ten 30-cu. in. driers are considerably less expensive than one 300-cu. in. drier," Wallace says.

Any number of these standard size driers can be manifolded, and there is no more pressure drop in the manifold assembly than in a single large unit, he points out.

"In servicing a unit with a manifold assembly, a few driers can be replaced at a time, thus reducing the moisture pick-up, which becomes serious when a single large unit is removed from the line," he also comments.

Cleveland ASRE To Learn About TV Transmission

CLEVELAND — A lecture-demonstration of television transmission will be given by Robert C. Clark, public relations supervisor for Ohio Bell Telephone Co., before members of the Cleveland Section of the American Society of Refrigerating Engineers at the Cleveland Engineering Society, Carnegie Ave. and E. 19th St., on Tuesday, Nov. 17, at 6 p.m.

In explaining and demonstrating the principles of radar and the use of micro-waves in transmitting television pictures, Clark will use special apparatus to show how micro-waves may be reflected, bent, made to go around corners, and concentrated into narrow beams.

He will also describe the Bell System's coaxial cable network, now being installed across the nation, which augments the radio relay system in carrying both network television programs and regular long distance telephone messages from one city to another.

ATTENTION
COMMERCIAL REFRIGERATION DEALERS & DISTRIBUTORS

Major Manufacturer of Commercial Refrigeration Products, disposing of overstocked inventory of open type self-service Display Cases.

Prices reduced well below factory cost.

For information on specifications & prices, write to Box 4403, Air Conditioning & Refrigeration News.

MANUFACTURER'S REPRESENTATIVES

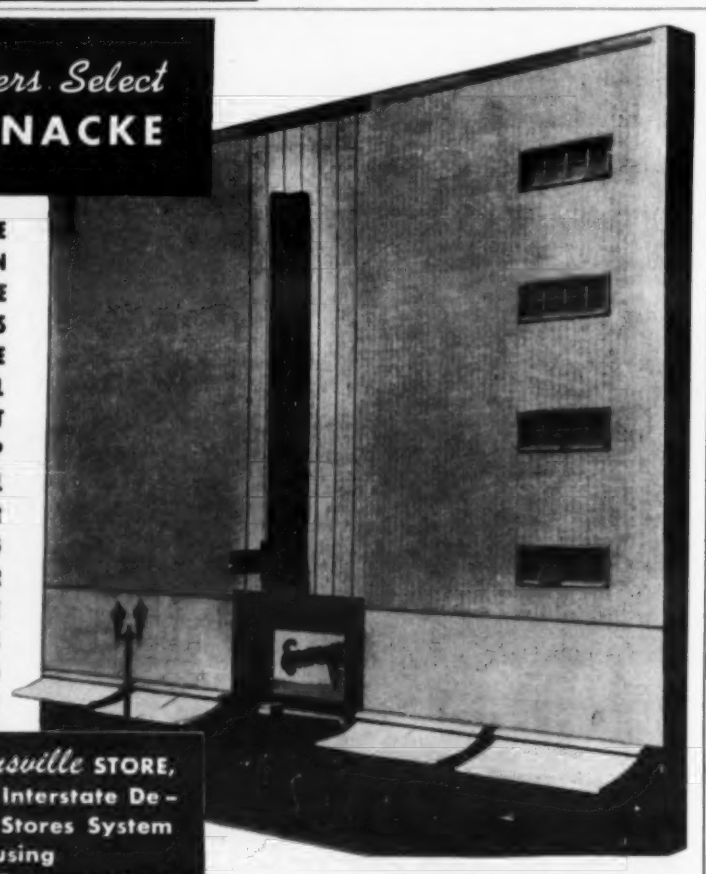
Due to expansion of the Jordon Refrigerator Company, excellent opportunities exist in several lucrative territories for manufacturer's representatives now contacting any of the following: commercial refrigeration dealers, hotel and restaurant equipment dealers, ice cream and dairy manufacturers, beverage industry (bottlers), refrigeration equipment wholesalers, hospitals and institutions, appliance dealers and distributors, refrigeration service engineers and contractors. Furnish complete information to:

MR. E. A. TERHUNE, Vice-President
Commercial Division
JORDON REFRIGERATOR CO.
58th and Grays Avenue
Philadelphia 43, Pa.

Appointments can be arranged at home office or at Booth No. 100, All-Industry Exposition, Cleveland.

Leaders Select **SCHNACKE**

FIVE 60-TON SCHNACKE COMPRESSORS PROVIDE INTEGRAL UNIT STEP CONTROL AIR CONDITIONING FOR FIVE FLOORS AND BASEMENT



THE *Evansville* STORE, second in Interstate Department Stores System using SCHNACKE compressors

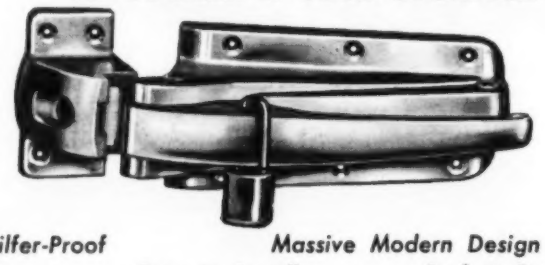
This Schnacke installation is an indirect, chilled water system with localized zone control on each floor. Five individual refrigeration circuits tie into the single chilled water system. The number of compressors in operation at any one time is determined by the need . . . and sequence of operation is alternated automatically. Another example of Schnacke's advanced engineering. Multiple compressor installations are practical; more economical in first cost and in operation.

SCHNACKE, INC.
1101 N. Governor St. Evansville, Ind.

Redmond
MICROMOTORS
One of largest stocks outside factory!
FACTORY DISTRIBUTORS
CYCLO-FREEZ CORP.
MARVIN L. "FERGIE" FERGESTAD
2120 S. Lyndale, Dept. A, Mpls. 5, Minn.

SAFETY LATCH
for COOLER or COLD STORAGE DOORS

K-55



Pilfer-Proof *Massive Modern Design*
Quiet Action *Easy to Install* *Perfect Sealed Door*
Frost Breaker Action *Easy to Operate*

SAFE
FROM ACCIDENTAL or WILLFUL ENTRAPMENT in
REFRIGERATORS

SAFE-GUARD LATCH NO. K-55 incorporates every important feature demanded by the trade for heavy-duty latches for walk-in doors—*modern design, quiet action, easy operation, air-tight sealing and tamperproof locking*—but surpassing all these is the SAFETY FEATURE which this splendid latch introduces for the first time in refrigeration history. *IT IS IMPOSSIBLE TO LOCK A PERSON, ACCIDENTALLY OR INTENTIONALLY, INSIDE A REFRIGERATOR WHICH IS EQUIPPED WITH THIS LATCH!* This SAFE-GUARD has been ingeniously engineered into the latch proper; no complicated installation is needed. The Inside Release Mechanism, which is normally used to emerge from the refrigerator, will unlatch the door *even though the latch is padlocked.* This important SAFETY FEATURE and the functional features of K-55, which are explained above, mark this as the outstanding latch for refrigeration service.

Send for Catalog

KASON HARDWARE CORPORATION
71 WALLABOUT STREET, BROOKLYN 11, N. Y.

Suit Halts Sale of Dryers Said To Be Damaged In Tornado

YOUNGSTOWN, Ohio — Common Pleas Judge John W. Ford granted a temporary injunction preventing Strouss-Hirschberg Department Store and May Co. from selling a number of electric clothes dryers.

Montgomery Ward Co. of Chicago, which filed the suit, charged the dryers were being sold as first class merchandise even though they were damaged in a tornado in Cleveland.

The petition states that the dryers were manufactured by Apex Electrical Mfg. Co. of Cleveland for Montgomery Ward to bear the Montgomery Ward firm name.

Montgomery Ward alleges that the clothes dryers were stored in Cleveland and before they were sold to Montgomery Ward they were damaged in the tornado last June.

Towns In Elmira Area Move To End 'Death Traps'

ELMIRA, N. Y. — Three Elmira area muncipalities moved to outlaw abandoned refrigerators, iceboxes, and similar containers as menaces to the safety of children.

Action by the Elmira and Corning City Councils makes it illegal to own unused boxes which cannot be opened from the inside.

The Elmira Heights Village Board decided to hold a public hearing Oct. 19 on the adoption of a similar ordinance.

The Elmira and Corning ordinances provide maximum penalties of $150 or 150 days in jail or both.

The resolution adopted by the Elmira City Council makes it "unlawful for any person to leave outside of any building or dwelling or any other place accessible to children any refrigerator, icebox, or other container unless same shall be protected against any entry by any child or unless the snap lock or other closing device be first removed."

13 'Death Traps' Burned as Canadian City Opens Drive

ST. CATHARINES, Ont., Canada.—The campaign to rid this city of "death trap" iceboxes got under way when 13 iceboxes were smashed and burned under the supervision of Fire Chief Art Burch and Mayor John Franklin. The boxes are being picked up by the Fire Dept. and Works Dept. on request.

Newly Formed Firm Will Distribute Crosley and Bendix In N.Y. Area

NEW YORK CITY—Appointment of the newly-formed Gerald O. Kaye & Assocs. Corp. as metropolitan New York distributor of Crosley and Bendix products, replacing the local branch of Crosley Distributing Div., Avco Distributing Corp., has been announced here.

Gerald O. Kaye, president of the new firm, said his company has purchased the assets of the Crosley branch and is now in full operation at 1114 First Ave.

Loyd Dopkins, who was New York branch manager, will return to his former position as manager of major accounts for the factory.

In addition to Kaye, other officers of the new company, which will operate as an independent distributor, are Samuel Brechner, executive vice president and general sales manager; Milton Brown, vice president in charge of merchandising and advertising; and Arnold Cohan, secretary.

Both Kaye and Brown were formerly associated with Bruno-New York, Inc., the former as vice president in charge of sales and Brown as advertising manager. Brechner had been manager of the New York distributorship of Allen B. Du Mont Laboratories, Inc., and Cohan, head of an advertising agency bearing his name, gave up the Bruno account to continue his business relationship with Kaye.

It was reported that the four officers are the only stockholders in the firm, with Kaye the major stockholder.

Remington President Sails

MR. AND MRS. HERBERT L. LAUBE of Auburn, N. Y., pose on sun deck of the superliner United States at New York, before sailing for Europe aboard the United States Lines flagship recently. Laube is president of the Remington Air Conditioning Corp. He and Mrs. Laube expect to be abroad a month on a combined business and pleasure trip, during which he'll investigate the air conditioning situation in Europe.

Philco International Sales Dept. In Phila.

PHILADELPHIA — Philco Corp. has announced the transfer of its sales and advertising departments to Philadelphia from New York City.

Sydney L. Capell, president, said the transfer brings together for the first time the domestic and international sales activities of Philco at the corporation's Philadelphia headquarters. He said the move was made possible by the importance of Philadelphia as a world trade center.

The company maintains export warehouses in Philadelphia, New York City, and Middletown, N. Y., as intermediary points for storage of Philco products intended for shipment to practically every country outside of the Iron Curtain.

The sales department of Philco International includes the Latin-American Div., headed by Vice President R. L. Romenyn, and the Europe-Africa-Asia Div., supervised by Vice President Fred Willard. Ovid Riso is vice president of the advertising and sales promotion department.

Frohlich Gets Control Of Warren-Connolly

NEW YORK CITY—Ed L. Frohlich, who has been vice president of Warren-Connolly, Inc. here, has acquired a majority interest in the appliance, television, and housewares distributorship and will succeed C. B. Warren as president, it was announced recently.

Warren, who founded the firm in 1935, is retiring.

Warren-Connolly has been distributing Norge products in the Greater New York area since it was organized. In 1946, it became the first distributor for O. A. Sutton Corp. The company also handles Worthington, Hallicrafters, Simplex, Scott-Atwater, and Eureka products.

Frohlich formerly represented Norge as a salesman in the Brooklyn territory and later as sales manager of the Norge dealer division in New York. He joined Warren-Connolly in 1935 as sales manager but returned to Norge in 1938 as eastern sales manager. In 1947, he rejoined Warren-Connolly as vice president.

Don Petrone--

(Concluded from Page 1, Column 5)

ment, and traveled extensively in South and Central America.

He served as a captain in the U. S. Army during the war, and rejoined Typhoon in 1945 in the capacity of sales manager. In 1947 he was elected vice president in charge of sales.

Petrone was one of the earliest advocates of packaged air conditioning, and has been directly responsible for many innovations in its application. In order to maintain Typhoon standards right down to the actual installation, Petrone, in 1947, personally instituted the Typhoon "School Circuit," conducted at dealer level.

Dailey, who had been president of Typhoon since 1931, also holds the office of treasurer of the Typhoon Prop-R-Temp Corp. of Florida, a Typhoon affiliate corporation set up to manufacture and distribute heat pumps.

It was previously announced that Mark E. Mooney has joined Typhoon as vice president in charge of sales. Mooney has assumed charge of all sales and distribution.

DON'T LET 'EM ROAR AT YOU!

Picture of an irate sales manager who just learned that somebody forgot to schedule an ad in the November 9 *SHOW ISSUE* of Air Conditioning & Refrigeration News.

Traditionally Air Conditioning & Refrigeration News goes "all out" for its Industry Exposition edition. This great newspaper is distributed at "The Big Show" to everyone who attends.

Carrying a complete list of exhibitors and their products, the floor plan of the Exposition and key to exhibits, featuring new products and high-lighting key industry events and meetings, summarizing the entire Exposition, the "Show Issue" renders valuable service both to exhibitors and visitors.

It puts exhibitors in contact with buyers . . . buyers in contact with suppliers . . . increases interest in and builds up attendance at all exhibits.

From an advertising standpoint it's the "pay-off" issue. Get's immediate, tangible action!

Plan to have a bigger-than-usual advertisement in this great "Show Issue." Little time is left to make your advertising space reservation. Do it NOW! Advertising deadline is October 30.

DEADLINE...OCTOBER 30

AUDITED PAID CIRCULATION ABC

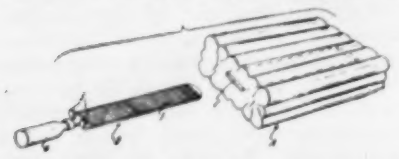
AIR CONDITIONING & REFRIGERATION News ABP

450 W. Fort Street, Detroit 26, Michigan

PATENTS

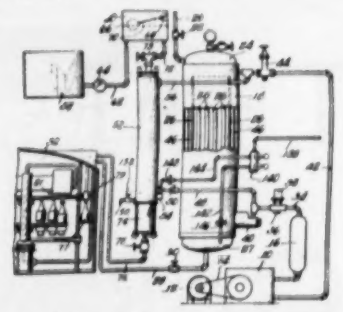
Week of May 26

2,639,590. MEANS FOR DEFROSTING REFRIGERATORS. Andrew G. Schramm, St. Louis, Mo. Application Oct. 14, 1949, Serial No. 121,263. 2 Claims. (Cl. 62—1.)



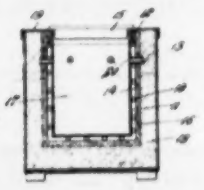
2. Means for defrosting a refrigerator comprising a defrosting element having fluted surface portions the channelways of which extend longitudinally of said defrosting element, said defrosting element being adapted to be heated to a high temperature exteriorly of the refrigerator to be defrosted and being provided with an opening formed therein and extended from end to end thereof, and a tool for handling said defrosting element when heated, said tool comprising a blade adapted for introduction into the opening of the defrosting element, and a heat-insulating handle at an end of said blade.

2,639,591. LIQUID COOLING APPARATUS. Harry G. Mojonnier, Oak Park, Ill., assignor to Mojonnier Bros. Co., Chicago, Ill., a corporation of Illinois. Application April 29, 1948, Serial No. 24,012. 12 Claims. (Cl. 62—3.)



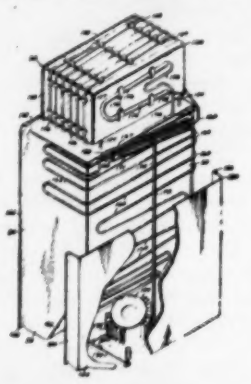
1. A refrigerating apparatus comprising a first evaporator unit, means for circulating water to be cooled therethrough, a second evaporator unit, means for circulating syrup to be cooled therethrough, and a common refrigerant system effecting the cooling of both evaporator units, said refrigerant system including means for proportioning the delivery of refrigerant to said evaporator units, and a common back pressure valve for controlling the refrigerant temperature within said evaporator units.

2,639,593. REFRIGERATOR INSULATION. Ragnar Edvard Deutgen, Stockholm, Sweden, assignor to Aktiebolaget Elektrolux, Stockholm, Sweden, a corporation of Sweden. Application Oct. 23, 1945, Serial No. 623,983. In Sweden Nov. 6, 1944. 23 Claims. (Cl. 62—99.)



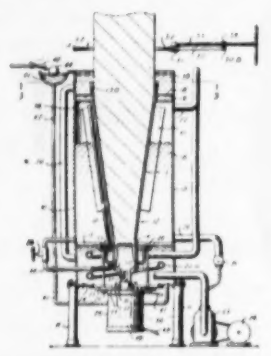
1. Refrigeration apparatus including structure defining a space to be cooled, cooling means to effect cooling of said space, a first body of material disposed about said space which is substantially impervious to moisture and provides such an insulating effect that the outer surface thereof during normal operation of said cooling means will be maintained at a temperature exceeding by only a few degrees the lowest temperature produced in said space, and means including a body of thermal insulation disposed about said first body which is permeable to air and in communication with said space to permit movement of air therebetween.

2,639,592. REFRIGERATOR HAVING REFRIGERANT COOLED LINER. Lawrence A. Philipp, Detroit, Mich., assignor to Nash-Kelvinator Corp., Detroit, Mich., a corporation of Maryland. Original application Sept. 22, 1948, Serial No. 50,472. Divided and this application Nov. 9, 1949, Serial No. 126,371. 7 Claims. (Cl. 62—95.)



1. In refrigerating apparatus, a compartment forming liner having top, bottom, side and rear walls, a secondary refrigerating system having a refrigerant evaporator coil extending sinuously along said rear wall substantially throughout its height having a group of widely spaced runs near the bottom of the rear wall and a group of closely spaced runs near the top of said liner extending along an upper portion only of said side walls adjacent said top wall, a primary refrigerating system having a refrigerant evaporator carried by the top wall of said liner and a portion forming a condenser for said secondary refrigerating system evaporator coil, and a secondary condenser connected with said secondary system evaporator coil and being arranged in heat exchange relationship with said portion of the primary refrigerating system evaporator.

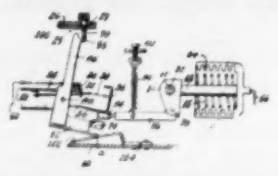
2,639,594. FREEZING MACHINE. John R. Watt, Austin, Tex. Application Aug. 10, 1949, Serial No. 109,600. 6 Claims. (Cl. 62—106.)



1. In a freezing machine a freezing cell having a flared wall section merging at its small end with a wall section formed parallel to the central longitudinal axis of the cell adapted to receive and guide a reciprocally mounted plunger, means for refrigerating the flared wall section and the closely adjacent portion of the plunger guide section, means for selectively refrigerating an intermediate portion of the plunger guide section and means for heating the portion of the guide section in which the plunger resides when in its position most remote from the flared portion.

2,640,121. TIME PRESSURE CONTROL. Harold S. King, Goshen, Ind., assignor to Penn Controls, Inc., Goshen, Ind., a corporation of Indiana. Application July 29, 1950, Serial No. 176,649. 8 Claims. (Cl. 200—81.5.)

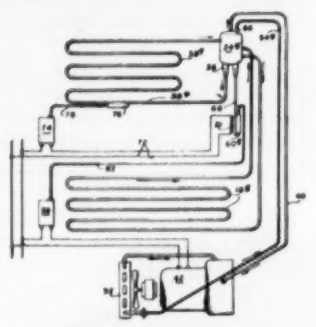
1. In a time-pressure control of the character disclosed, a control device having an operative position, pressure operated means operable upon pressure reduction to move said control device away from said operative position and toward but not to, inoperative position whereby to minimize the energy required to finish the movement thereof to inoperative position, stop means to render said pressure operated means incapable of finishing such movement, a timer controlled element to finish such movement by means



of energy supplied by the timer, said pressure operated means being operable upon pressure increase to a predetermined value to effect movement of the control device again to operative position.

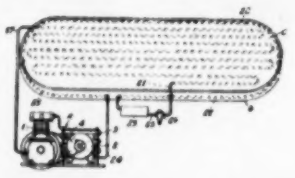
Week of June 2

2,640,327. DUAL EVAPORATOR REFRIGERATION APPARATUS. Carl F. Alsing, Wilbraham, Mass., assignor to Westinghouse Electric Corp., East Pittsburgh, Pa., a corporation of Pennsylvania. Application July 30, 1949, Serial No. 107,790. 4 Claims. (Cl. 62—4.)



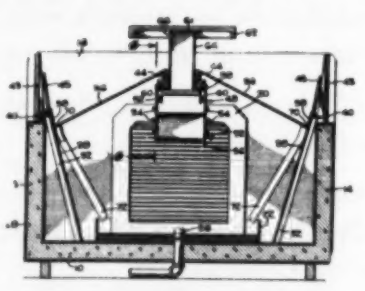
1. In refrigerating apparatus, the combination of a vessel adapted and arranged to store refrigerant liquid, refrigerant vapor compressing and condensing apparatus adapted to supply refrigerant liquid to said vessel, a first evaporator, a first conduit connected at one end to said vessel at a first portion thereof spaced from the bottom of the vessel, said first conduit being connected at its other end to said first evaporator, said first conduit conducting refrigerant liquid from said vessel to said first evaporator, a second evaporator, a second conduit connected at one end to said vessel at a second portion thereof located at an elevation above that of said first portion, said second conduit being connected at its other end to said second evaporator, and a pump adapted to pump refrigerant liquid from an area of said vessel located below said first portion, said pump discharging said liquid into said second conduit.

2,640,329. COLD PLATE WITH MEANS TO PREVENT CONDENSATION. Johan Frederik Ingvar Ingvardsen, Copenhagen, Denmark. Application Sept. 24, 1949, Serial No. 117,603. 7 Claims. (Cl. 62—89.5.)



1. In combination with a refrigerating unit comprising a compressor, a primary condenser for cooling the compressed refrigerant to its boiling point and partially condensing said compressed refrigerant, a receiver for liquefied refrigerant and an evaporator, a cold plate comprising a refrigerated surface cooled by the evaporator of said refrigerating unit, a frame extending along the edge of the refrigerated surface in juxtaposition to said surface, a gasket forming an air tight joint between the refrigerated surface and the frame and a temperature control conduit in heat transferring relation with the frame to maintain the frame at a uniform temperature approximately equal to room temperature, said conduit being connected in series between said condenser and receiver and constituting a secondary condenser, the refrigerant in said conduit being in a composite gaseous and liquid stage.

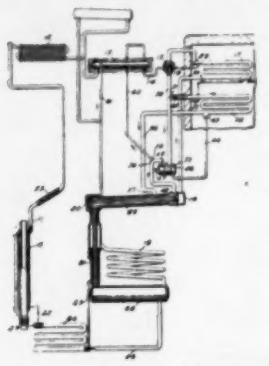
2,640,330. REFRIGERATED DISPLAY CASE. Howard O. Johnson, Perris, Calif. Application Jan. 3, 1950, Serial No. 136,633. 10 Claims. (Cl. 62—89.5.)



1. In an open refrigerated display case, the combination of a display rack, means for cooling and circulating air, a drip pan, a header, means for restricting the flow of air from over said drip pan into said header, an air outlet in said header providing an air passage from said header over the display rack, and a baffle providing an air passage from said display rack to said first mentioned means.

2,640,331. ABSORPTION REFRIGERATION. Sigurd Mattias Backstrom, Stockholm, Sweden, assignor to Aktiebolaget Elektrolux, Stockholm, Sweden, a corporation of Sweden. Application Nov. 5, 1946, Serial No. 707,354. In Sweden Nov. 8, 1945, 18 Claims. (Cl. 62—119.5.)

1. Absorption refrigeration apparatus employing evaporation of refrigerant fluid in the presence of inert gas including a circuit for circulation of such gas comprising an upper, intermediate and lower cooling elements in which said evaporation may take place, connections for con-

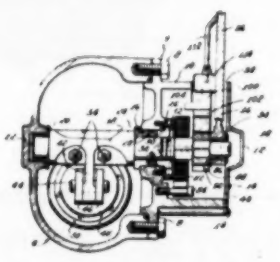


ducting refrigerant liquid by gravity flow from said upper cooling element to said intermediate cooling element and from the latter to said lower cooling element, said refrigerant fluid connections each having a liquid trap to prevent flow of inert gas therethrough, each of said cooling elements having a single place at which inert gas is introduced and a single place at which inert gas passes therefrom and being connected in said circuit for flow of inert gas through said intermediate cooling element and from the latter through said lower and upper cooling elements so that evaporation of refrigerant fluid takes place at a low temperature in said intermediate cooling element and at higher temperatures in said lower and upper cooling elements, and means including connections for effecting circulation of inert gas through said intermediate cooling element at a rate which is always greater than that at which circulation of inert gas is effected through said lower and upper cooling elements, said last-mentioned means including provisions for subdividing the inert gas passing from said intermediate cooling element into a plurality of gas streams of which one flows through said lower cooling element.

2,640,412. ADJUSTABLE GRILLE. Russell P. Sweger, Rockford, Ill., assignor to Barber-Colman Co., Rockford, Ill., a corporation of Illinois. Application Feb. 24, 1949, Serial No. 78,215. 2 Claims. (Cl. 98—40.)

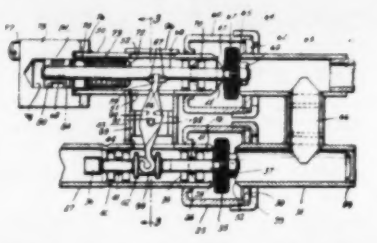
2. In a grille the combination of a frame formed with an annular guide channel defining a circular opening, a pair of arcuate members disposed in said channel on diametrically opposite sides thereof and guided by the walls of the channel for circumferential movement therein, a trunnion rigid with and projecting inwardly from each of said arcuate members and partially across said opening, said trunnions being disposed wholly within said opening, and a disk disposed in said opening and having outwardly opening recesses on diametrically opposite sides thereof receiving said trunnions to permit swinging of the disk about a diameter of said opening.

2,640,491. VALVE. Donald Keith MacBain, Long Beach, Calif., assignor to Dr. Paul A. Dewhirst, Los Angeles, Calif. Application Jan. 7, 1950, Serial No. 137,356. 5 Claims. (Cl. 137—75.)



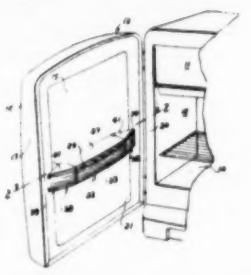
1. In a valve structure, a body having a valve seat, a valve head supporting shaft rotatably supported by said body, a valve head on said shaft and positioned in said casing to swing into engagement with said seat, an operating member rotatably mounted on said shaft, a shaft locking element having a fusible connection with said shaft, a readily releasable connection between said operating member and said locking element, a stop device with which the operating member is releasably engageable to hold the operating member in a position whereby the valve head will be held open, and a power load unit connected to said shaft and yieldably urging said shaft in a rotational direction tending to close said valve head against said seat.

2,640,494. REVERSE CYCLE VALVE. Edward F. Kounovsky, St. Louis, Mo., assignor to Alco Valve Co., University City, Mo., a corporation of Missouri. Application Jan. 9, 1947, Serial No. 720,956. 11 Claims. (Cl. 137—601.)



1. In a valve mechanism, a housing, a high pressure inlet therein, a low pressure outlet, a first work outlet, a second work outlet, a main control valve movable to selectively connect one of the work outlets with the low pressure outlet and to cut off the other from the low pressure outlet, a second valve, a pair of spaced valve seats therefor, said second valve being movable between the said valve seats to connect one of the work outlets with the inlet and to cut off the other work outlet from the inlet, means to move said main valve, and lost-motion connections between the said moving means and the second valve, to cause said second valve to move when the main valve is moved.

2,640,751. REFRIGERATOR CABINET STRUCTURE, INCLUDING RECEPTACLE AND MOUNTING THEREFOR. Carl G. Robbins, Des Plaines, Ill., assignor to Motor Products Corp., Detroit, Mich., a corporation of New York. Application July 16, 1951, Serial No. 236,879. 10 Claims. (Cl. 312—245.)



1. In a refrigerator cabinet having a vertically extending supporting wall, a pair of horizontally aligned supports secured to the refrigerator cabinet wall and having vertical end walls extending perpendicular to the cabinet wall, each support also having a top wall extending laterally outwardly from the top edge of the end wall and having a side wall projecting laterally outwardly from the free vertical edge of the end wall, an open top receptacle extending between the end walls of the supports and removably mounted on said supports, said receptacle having end walls respectively positioned adjacent the end walls of the supports and having a side wall forming in effect a continuation of the side walls of said supports, a lid for the open top of the receptacle forming in effect a continuation of the top walls of the supports, slidably engageable vertically extending guiding means on the end walls of the receptacle and on the adjacent end walls of the supports permitting removal of the receptacle from the supports by lifting the receptacle relative to said supports, and cooperating engaging seating means on the supports and opposite ends of the receptacle vertically relative to the supports.

2,640,411. AIR INLET HOUSING. Edmund E. Hans, Detroit, Mich. Application June 2, 1949, Serial No. 96,791 (No Drawing). 5 Claims. (Cl. 98—14.)

1. An air inlet device including a circular casing having an imperforate top and an annular depending wall, the latter having openings therethrough for the passage of air into the casing, the underside of the depending wall being adapted to be mounted upon a roof, a collar in the casing mounted around an opening formed through the roof, a downwardly and outwardly flared circular open ended deflector mounted on the underside of the roof coaxial with the collar and extending from the top side of the roof at the edge of the opening to the underside thereof, the deflector being of smoothly reverse-curved contour, a fan coaxially mounted in the collar and having blades thereon which are substantially in horizontal alignment with the upper open end of said deflector and in close proximity to the wall of said upper open end, and an imperforate plate mounted in spaced relation beneath the underside of the deflector and fan and extending outwardly beyond the upper open end of the deflector all around the latter, said plate being curved downwardly and outwardly so as to form an air passage between it and said deflector, said fan being adapted to induce a flow of air into the casing and through the collar and to discharge it through said passage in a substantially horizontal plane adjacent the underside of said roof.

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Government Contracts

PROCUREMENT INFORMATION

The following is a list of proposed procurements issued by the various indicated U. S. Government procurement offices. This list is compiled and made available daily on a free pick-up basis. Prospective bidders may obtain complete bid sets by a request to the purchasing officer under which the purchase is listed in this Synopsis. Be sure to identify completely the bid invitation you wish by including in your request the item description, the invitation number or reference number and the opening date. This will save time in filling your request. For reasons of economy, specifications are normally not included with the bid invitations unless the specification is a new one.

It is not necessary to refer solely to the issuing office for additional data on a bid invitation issued by any of the following U. S. Army Ordnance Offices: Ordnance Tank Automotive Center; Detroit Arsenal; Frankford Arsenal; Picatinny Arsenal; Raritan Arsenal; Ordnance Ammunition Center, Joliet, Ill.; Rock Island Arsenal; Springfield Armory; Watertown Arsenal; and Watervliet Arsenal. Complete information on any purchase listed by any of those offices alone can be obtained from the Ordnance District Office nearest you. Its adderss is on file in your nearest Department of Commerce Field Office. Do not ask an Ordnance District Office for information on a purchase unless it is listed by one of the above-named offices.

DEPARTMENT OF DEFENSE

Description	Quantity	Invitation No.	Opening Date
General Stores Supply Office, 700 Robbins Ave., Philadelphia 11, Pennsylvania			
Fans, Portable, Axial, Electric Explosion Proof Driving Motor 3450 RPM Motor Enclosed and Mounted in Aluminum Buships Spec. 17 F 8.	85 ea.	3-1742-B	26 Oct 53
Purchases Division, Post G-4, Fort Bragg, North Carolina			
Air Conditioning Systems for Buildings T9-43 and 577 Fort Bragg, N. C.	Job	ENG 54-22	29 Oct 53
Officer In Charge, Navy Purchasing Office, Washington, D. C.			
Coils-Cooling-Direct Expansion Freon-Fin-Tube Type-Sizes in Face-Area Ranging 2 Point 0 to 5 Point 0-Square Feet. Specification MIL-A-2939B/Ships/27 Aug 1953.	150	7250-S	19 Nov 53
Supply Officer, Charleston Naval Shipyard, Naval Base, Charleston, South Carolina, Procurement Office			
Ranges Electric Domestic Spec. W-R-101A.	164 ea.	(CNS-21561-B)	29 Oct 53
Refrigerators Electric Self Contained Spec. AA-R-211C.	208 ea.	(CNS-21562-B)	29 Oct 53

GENERAL SERVICES ADMINISTRATION

Description	Quantity	Reference No.	App. Bid Date
General Services Administration, Business Service Center, Region 4, 50 7th St., N.E., Atlanta 5, Georgia			
Air Conditioning Alterations, Etc., Don-Ce-Sar Bldg., Pass-A-Grille, Florida.	Job	CR4-592	29 Oct 53
General Services Administration, 19th and F Sts., N.W., Washington 25, D. C.			
Furnishing and installing ventilating fans, etc., in the warehouse, laundry and shops building at St. Elizabeths Hospital, Washington, D. C. Ten New Ventilating fans complete with conduit and wiring. Eighteen service platforms to fans/steel framing and grating/rerouting of conduit and wiring in meat cutting area.	Job	49-070	2 Nov 53
General Services Administration, Region 2, Business Service Center, 250 Hudson St., New York 13, N. Y.			
Heating Repairs, P.O. Schenectady, N. Y.	Job	None	22 Oct 53
Correcting unsatisfactory heating condition, etc., P.O. & Courthouse, New. Pittsburgh, Pa.	Job	None	23 Oct 53
Repairs to Ventilating System Custom House & Appraisers Stores, Phila., Pa.	Job	None	26 Oct 53

U. S. DEPARTMENT OF STATE

Description	Quantity	Reference No.	App. Bid Date
Division of Central Services, Department of State, Washington, D. C.			
Air Filter Cells, for Air Conditioners. Shall be of permanent washable, Viscous Type in 7 Sizes.	Total of 270 pcs.	CS-54-14	30 Oct 53

CONTRACTS AWARDED THROUGH OCT. 12

Navy Department, District Public Works Officer, 6nd and Officer in Charge of Construction, U. S. Naval Base, Charleston, S. C.

Air Conditioning System, Building No. 414 at the U. S. Naval Air Station, Jacksonville, Florida.—Job, $37.257.—Henly & Beckwith, Inc., 2628 Pearl St., Jacksonville, Fla.

Westinghouse Launches Consumer Product Training To Aid Distributor Salesmen

MANSFIELD, Ohio — Anticipating the need for trained sales manpower to move goods when its new consumer products plants near top production, Westinghouse Electric Corp. has launched an aggressive training program aimed at the distributor level.

Twenty-five distributor sales students met here recently at the Electric Appliance Div. to open an eight-week factory school designed to train them in all phases of consumer products selling, reports M. H. Vereeke, consumer products sales personnel training manager.

Participating in the opening program are J. M. McKibbin, vice president, Consumer Products Div.; V. D. Kniss, general sales manager, Consumer Products; and J. H. Ashbaugh, vice president, Electric Appliance Div.

Others include R. J. Sargent, manager of major appliances; R. M. Oliver, manager of portable appliances; W. B. Creech, manager of marketing; and C. S. Gischel, general manager, Consumer Products, Westinghouse Electric Supply Co.

Back of the factory school is an intensive 10-month "on the job" work program at the distributorship. Sales students selected by distributors receive a basic training in all departments of the distributor sales organization and round out this training with a four-week assignment in a retail store.

Citing the new Westinghouse plants in Columbus, Ohio (refrigerators) and Metuchen, N. J. (television), Vereeke said that "with the increased facilities soon to be available for producing consumer products, additional sales manpower is essential if we are to move this new volume. This sales manpower must be trained and available when needed."

Vereeke said that enrollment at the factory school will be kept to approximately 25 students per class to insure a maximum amount of discussion and classroom participation of all students. Basic courses to be covered include Westinghouse division orientation, dealer coverage, dealer development, training retail salesmen, and basic selling.

"Instructors in the classes," he went on, "will be highly qualified in their field. Product discussions will be led by appliance managers, sales managers, and sales training supervisors. Many of the distributor subjects will be covered by sucessful distributor salesmen."

"The intent of the factory school for distributor sales students is to thoroughly cover the job of a consumer products distributor salesman," Vereeke pointed out. "Schools will be held at several consumer products plants to give the student a broad concept and background of Westinghouse in the consumer products industry."

Major appliance and portable appliances will be covered at the Mansfield plant. Later the students will move to the East Sprinfield, Mass. plant to learn fans, vacuum cleaners, and refrigeration specialties; to the Bloomfield, N. J. plant to cover lamps and to the Metuchen, N. J. plant to learn radio and television.

The distributor sales students will conclude their tour with a visit to the company's East Pittsburgh,, Pa., plant. Graduation ceremonies will be held in Pittsburgh on Nov. 20.

Elam, Dee Take Posts In G-E Appl. Control Dept.

SCHENECTADY, N. Y.—Two appointments in General Electric Co.'s Appliance Control Dept. were announced recently by John C. Helies, department general manager.

Named sales promotion specialist was B. R. Elam, Jr., who will be in charge of promotional activities for the department's full line of controls for appliance and home heating industries. Robert F. Dee has been appointed market research specialist with duties related to the study of industry trends, and market possibilities for new products.

Elam joined the G-E Appliance and Merchandising Dept. at Bridgeport, Conn., in 1948, and had successive advertising and sales promotion assignments,

In 1950 he was transferred to Louisville, Ky., where he served as supervisor of full-line advertising and sales promotion for major appliances. Elam remained at this post until his present appointment.

Dee joined Beech Aircraft Corp. at Wichita, Kan. in 1948 in a sales promotion and research capacity.

In January, 1951, he accepted a position with Amana Refrigeration, Inc., as market research manager. Dee joined General Electric when he assumed his newly-created post.

Tinnerman Elevated to Board Chairman, Schad Named to Presidency

CLEVELAND—A. H. Tinnerman, president of Tinnerman Products, Inc., since 1939, has been elevated to the position of chairman of the board and George J. Schad, vice president, has been named president.

Tinnerman, who pioneered the field of spring tension fastening, has guided the growth and development of Tinnerman Products, Inc., from a leading stove manufacturing firm to what is claimed to be the largest fabricator and producer of engineered fasteners in the world.

Detroit Jobber Gets OK For Profit-Sharing Plan

DETROIT—Radio Specialties Co., Inc., local jobber of radio, electronic, television, communication, and sound equipment and parts, announced that the Internal Revenue Dept. has approved its profit-sharing plan started Jan. 1, 1952.

The plan covers all employes who have been with the company for three or more years and provides for distribution of profit based on the employe's earnings. Twenty-three of the firm's 65 employes are eligible for profit sharing for 1952.

Honeywell Names Kaiser Eastern Region Manager; Michelson Has New Duties

MINNEAPOLIS — Appointment of Fred Kaiser as manager of the eastern region of Minneapolis-Honeywell Regulator Co., with headquarters in New York, was announced recently by Tom McDonald, vice president in charge of sales.

The eastern region, embracing eight states, is the largest in the company's nationwide field sales network and covers New York, New Jersey, Connecticut, Rhode Island, Massachusetts, New Hampshire, Vermont, and Maine.

Arnold Michelson, who has been handling the regional manager's duties, has been given additional duties and responsibilities as resident vice president.

He will continue to make his headquarters in New York.

DuBois, Chalfant, Yahn Win Thor Sales Posts

CHICAGO — Three appointments within the Thor Corp. Sales Dept. have been announced by Thor general sales manager, Thomas R. Chadwick.

C. D. DuBois, formerly Thor western division sales manager, has been named national account sales manager, and will assume supervision of the B. F. Goodrich account.

Paul Chalfant, formerly assistant to C. D. DuBois, has been named western division sales manager.

Chadwick also announced the appointment of Fred Yahn as manager of the contractor department for the central division.

Yahn will assist Thor distributors in the sale of Thor products to builders and contractors, and will assist distributors in setting up sales organizations for the distribution of the Thor built-in electric range line.

Admiral Distributing Unit Opened In Jacksonville

CHICAGO — Admiral Distributors, Inc., Jacksonville (Fla.) Div., has been established at 700 Union St. to handle the sales and service of Admiral products in the northern Florida territory, according to Clarence Tay, general manager of branches.

Charles B. Birchwood, a veteran in the television-appliance business, is general manager of the company, according to the announcement.

He formerly was general sales manager for State Distributing Co. in Jacksonville for two years. Prior to that, he was TV-radio sales manager for Feasley-Gaither in that city.

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ATTENTION, MANUFACTURERS—Maybe you don't need a full-time writer for your instruction sheets and manuals. In that case, it will pay you to look into a new writing service offered by a practical refrigeration and air conditioning man who can handle clear "American" English. VIRGIL C. JAMES, Cuba, Missouri.

SALESMAN FOR air conditioning and commercial refrigeration, 46 yrs. old, 20 years' experience, proven sales record, excellent references, will locate anywhere, preferably South. BOX 4407, Air Conditioning & Refrigeration News.

CARRIER-TRAINED ENGINEER with extensive experience in application and sales of air conditioning and heating equipment desires to locate with field office of large corporation or an established dealer. BOX 4408, Air Conditioning & Refrigeration News.

FORTY YEARS old, over twenty years in the refrigeration and air conditioning business. Ten years as service manager handling over twenty-five men. Just sold own business after six years as sole owner, working about ten servicemen, three salesmen. Did about a quarter million dollars gross last year. Would like to be located so that I could live in South Florida or Southeast; would travel. Can talk and sell air conditioning or refrigeration from a service, sales, or engineering angle. Could meet in Cleveland in November for interview. Would like to sell for a good manufacturer. BOX 4409, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

AIR CONDITIONING ENGINEER—Commercial and industrial. Competent in load estimating, equipment selection and application up to 150 tons. Exceptional opportunity in Hartford, Connecticut, with Carrier distributor. Write, giving complete experience, education, salary desired, references, availability, etc., to warrant interview. W. O. Gilboy, THE GEORGE ELLIS COMPANY, 3000 Main Street, Hartford, Connecticut.

MANUFACTURER'S REPRESENTATIVES wanted. Our sales program for 1954 provides for the establishment of representatives in several desirable territories. Complete line refrigerated display and storage fixtures, including latest design self-service models for supermarket; also bakery refrigerators. Contact dealers, distributors, and food chains. Visit our display at the All-Industry Exposition, Cleveland, Booth 554. Ask for A. T. Mickle, Sales Manager, or write our office direct if you will not be at the Cleveland show. Give complete details as to experience and industry references in first letter. FEDERAL REFRIGERATOR MFG. CO., P. O. Box 465, Waukesha, Wisconsin.

MANUFACTURER'S REPRESENTATIVES territories available for new Cooler Cub water coolers and circulating liquid type coolers. Extremely attractive prices. Advantages in size, weight, method of construction. Give full background and territory, or visit us at Booth 812, 8th All-Industry Exposition, Cleveland. REMCOR PRODUCTS COMPANY, 321 E. Grand Avenue, Chicago 11.

ENGINEER, AIR conditioning; graduate, for development and production on room coolers. Hermetic systems and capillary experience necessary. Excellent chance for young engineer with good experience. Salary open. Location N. Y. C. BOX 4410, Air Conditioning & Refrigeration News.

REFRIGERATION ENGINEER, Graduate; familiar with small refrigeration systems, design, testing, and processing. Excellent position. Good salary. Location N. Y. C. BOX 4411, Air Conditioning & Refrigeration News.

EQUIPMENT WANTED

CHRYSLER AIRTEMP compressor bodies needed for reoperation process. Top prices paid and we pay freight. Convert your old or junked units into cash. Give serial and model numbers. A. S. JOHNSON COMPANY, INC., 1240 9th Street, N. W., Washington 1, D. C.

EQUIPMENT FOR SALE

YORK COLDWELL water cooler, model R5W2; cooling capacity 180 GPH from 80° F., to 45° F.: unit is completely self-contained, new and in original crate; has 5 HP compressor motor for 220-3-60. Ideal for bottlers, bakeries, and circulating drinking water systems. Price, $1,294.00, f.o.b., Macon, Georgia. CONDITIONED AIR, INC., 325 Fifth Street, Macon, Georgia.

BRAND-NEW— STANGUARD Cold Plates, 18" x 70", packaged ten (10) to the crate—$7.50 each. Five (5) cubic foot self-contained freezers with ¼ HP. Copelametic units, crated and ready to ship, $110.00 each. GEORGE SCHOENBACHER, 2347 S. Michigan Avenue, Chicago, Illinois.

ATTENTION SERVICEMEN — Send for our 1953 Catalog. Relays, expansion valves, controls, dehydrators, V belts, open & hermetic units. All new merchandise at great savings up to 50%. Sold on Money Back Guarantee. WALTER W. STARR REFRIGERATION, 2833 Lincoln Ave., Chicago 13, Illinois.

BUSINESS OPPORTUNITIES

MANUFACTURERS' REPRESENTATIVE —Chicago. Well-established manufacturers' representative in Chicago area is interested in representing an additional manufacturer of component parts to be sold to air conditioning and refrigeration manufacturers in our territory. We have four outside salesmen who are technically qualified to engineer your products properly. If you have a quality product and production capacity, we can assure you of substantial volume from best accounts. BOX 4412, Air Conditioning & Refrigeration News.

FOR SALE—Established business in food market equipment, including sales franchise of leading refrigerator case manufacturer. Location, Southern California. Good opportunity for experienced party to acquire going business at reasonable cost. Owner retiring. BOX 4413, Air Conditioning & Refrigeration News.

B9 Code--

(Concluded from Page 1, Column 5)

10 cu. ft. are required to have a single pressure-relief device (spring-loaded valve or rupture member), but those 10 cu. ft. and over must have two pressure-relief devices (two spring-loaded valves or one valve and one rupture member) in parallel.

In the 1950 version of the code a fusible plug (or relief device) could be used in a pressure vessel up to and including 5 cu. ft., but two pressure-relief devices were required in all vessels over 5 cu. ft.

Certain changes have also been made in Section 11 covering "Refrigerant-Containing Pressure Vessels," but these are primarily to bring the code in line with the ASME Boiler and Pressure Vessel Code.

Similarly, increased wall thickness requirements for watertube size hard copper tubing and soft copper tubing are intended to bring the B9 code in line with ASTM specifications which actually cover the manufacture of copper tubing.

Harry Krich Dies at 79; Was Pioneer Distributor

NEWARK, N. J.—Funeral services were held here recently for Harry Krich, who died Oct. 11 at his home in Beverly Hills, Calif.

Born in Russia 79 years ago, Krich came to Newark in his youth where, nearly a half-century ago, he founded a small distributorship which grew until, in 1922, he acquired control of Radio Distributing Corp. (Radisco).

Thus began an era of progress for Krich-Radisco, Inc., a pioneer in radio and the first RCA distributor in the United States. Within a few years, the company became well known throughout the radio and appliance industry as a leading distributor.

In October, 1950, Krich-Radisco, Inc. was completely reorganized, the result being the formation of the four separate corporations which now occupy the Distributors building in Newark: Krich-New Jersey, Inc., Allied Distributors-New Jersey, Inc., Associated Distributors-New Jersey, Inc., and K-R Services, Inc.

These companies are now under the management of Max, Paul, and Barney Krich, his three sons.

Carrier Opens New $250,000 Cleveland Headquarters Bldg.

CLEVELAND—The new expanded Cleveland headquarters of Carrier Corp. officially opened recently in a $250,000 air conditioned building at 2203 Superior Ave.

The modern, two-story building will provide 11,000 sq. ft. of office and shop space for Carrier's sales, engineering, and service activities in the five-state Cleveland district, it was announced by Joseph H. Bailey, direct district manager for Carrier.

"Opening of these new quarters, about four times as large as our previous facilities, is necessitated by the recent increase in Carrier's business in the Cleveland area," Bailey said.

The area served out of Cleveland includes all of Ohio and most of the states of Michigan, Indiana, Kentucky, and West Virginia. The new office is the fifth opened recently by Carrier as part of its current expansion program.

The 70-ft. by 165-ft. Cleveland headquarters is of green terra cotta construction with an Indiana limestone base. A feature is windows of green tinted glass across only the front of the building, made possible by the 40-ton year-round air conditioning system which controls indoor temperature. Offices have modern soundproof ceilings, fluorescent lighting, and tile floors.

The building incorporates a modern reception room, conference rooms, private offices for sales, engineering, construction, and service personnel and, at the rear, a shop area. Outside parking is provided and the office has been designed to allow for future expansion.

Situated on a plot 115 ft. by 165 ft., the building provides quarters for 43 Carrier personnel at the present time. The second floor is occupied by the Gordon Furniture Co.

Carrier executives in the new building, besides Bailey, include Henry W. Branson, dealer district manager; William A. Bingham, district construction manager; John E. Teverbaugh, district chief engineer; and Leslie C. Binder, district accountant.

The building is occupied on a long-term lease by Carrier. The new telephone number is TOwer 1-6640.

Electrostatic Air Filter Recovers Oil for Reuse

WATERBURY, Conn. — A unique application of electrostatic air filters at Scovill Mfg. Co. here not only removes cutting oil mist from the air but recovers oil for reuse.

Three Precipitrons have been installed in the Chucking department where such products as hose fittings and the like are machined. A substantial amount of cutting oil is used in these operations, creating an oil mist in the air.

Hoods placed directly over the machines are connected to the air cleaners through ductwork, a fan pulling the air and oil mist from the machines to the filters.

Here the oil particles are ionized and attracted to the collector plates of the Precipitron, while the cleaned air is discharged through a vent back into the room.

When enough oil collects on the plates, a drop is formed. This falls into a catch basin whence it is piped to the oil reclaiming room on the floor below.

After being filtered and cleaned, the reclaimed oil is returned to the Chucking department where it is used again.

Century Engineering Cuts Heating Equipment Prices

CEDAR RAPIDS, Iowa — Century Engineering Corp. here has reduced prices on its automatic heating equipment on average of 10%, it was announced recently by W. S. Moellering, director of sales.

Air Conditioning Fan Motor Meeting--

(Concluded from Page 1, Column 2)

Both stressed the fact that booming sales of air conditioners mean a vastly increased market for motors.

For 1953, Irwin said, sales totals will probably include 950,000 room units, 70,000 commercial package units, and 50,000 residential units, representing more than 2,500,000 motors, not including those on auxiliary equipment, such as cooling towers, etc.

"As one applies the predicted rate of growth factor to this motor requirement, it is seen that in 1954, a total of about 3,500,000 motors will be required, with steady growth continuing upward," Irwin declared, explaining that an average of 2½ motors are required per unit.

In discussing shaded pole motors used for condenser and evaporator fans in window units, Morgan complained that the motor industry had no data as to their life.

He emphasized that condenser fan motors, especially, are subjected to extreme operations in the South, where temperatures and humidities in the condenser compartment frequently approach 140° and 95% to 100%, respectively.

"Fan motors ought to last as long as the hermetic motor-compressor unit, which has a five-year warranty," Morgan told the motor engineers.

Permanent lubrication is considered essential, he and others pointed out, because the average user will not oil the fan motors regularly, and in many cases the fan motors are not readily accessible even if the user remembers.

The problem, however, is complicated by the fact that present type permanently lubricated motors are noisier and more expensive than the shaded pole motors.

Regarding noise, "home air conditioning units are at the same stage now that forced warm air systems were a few years ago," remarked W. H. Wentling, assistant chief engineer, Lau Blower Co.

"Noise wasn't too important at first, but once forced air systems became generally accepted, the noise level had to be reduced. This was first accomplished by increasing the temperature difference across the heat exchanger which permitted slowing down the blower.

"When that was done, however, other noises which hadn't been heard before became apparent. These in turn required improved designs and manufacturing methods," Wentling said.

Louis Gilgor Appointed Controller for Jordon

PHILADELPHIA—Louis I. Gilgor, an accountant since 1918 and a member of the Philadelphia bar since 1926, has been named controller for Jordon Refrigerator Co., Harry Fogel, executive vice president, announced.

Gilgor, a former teacher at Northeast high school in Philadelphia, has been impartial chairman of the Jewish baking industry in Philadelphia since 1927. He also was an instructor at the old Philadelphia College of Law.

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You've probably read about INNER-FIN, the patented Bush development. It's been called *"the first major advancement in finned coil design since finned coils replaced bare pipe".*

We hope you'll stop by the Bush booth (Number 508) and see the operating display of INNER-FIN coils. It will be a fine opportunity to compare for yourself the efficiency and space saving features of INNER-FIN coils with coils of conventional design.

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CLEVELAND, NOV. 9-12, 1953

Without uncrating all the surprises, we can also mention that there will be a new Bush Cooling Tower on display — one designed to meet the needs of the growing residential market.

There'll be other Bush products, too, of course . . . Unit Coolers, an Air Handling Unit, Evaporative Condenser, the Bush "Under-the-Window" unit for year 'round air conditioning with individual room control, and air conditioning coils.

We're looking forward to showing you our surprises. Don't forget to stop in.

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